UPDATE OF THE DIAGNOSTIC TRADE INTEGRATION STUDY

DTIS 2016

MINISTRY OF FOREIGN AFFAIRS, TRADE, TOURISM, ENVIRONMENT AND LABOUR

GOVERNMENT OF TUVALU

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Table of Contents

Foreword from the Government of Tuvalu

Preface

Tuvalu is both an LDC and Small Island Developing State (SIDS) in the Pacific Ocean, comprising nine islands with a total population of 10,823. Tuvalu faces challenges of insularity, remoteness and smallness leading to major trade constraints in terms of supply capacity, global and regional market access and trade competitiveness. In order to respond to these challenges and in partnership with its development partners, the Government of Tuvalu has embarked on major reforms embodied in the National Development Plan Te Kakeega and in the setting up of the institutional framework with sectoral policies (including the 2016 Tuvalu Trade Policy Framework) aimed at promoting trade development in a sustainable and inclusive manner.

In 2007, the Government of Tuvalu joined the Enhanced Integrated Framework (EIF). The EIF is a multi-stakeholder initiative aimed at: (i) assisting LDCs in mainstreaming trade as a vehicle for economic growth and poverty reduction into their national development plans; and (ii) assisting in the coordinated delivery of trade-related technical assistance to meet the trade capacity gaps identified by LDCs. The purpose of the DTIS was to identify key constraints to Tuvalu's integration into the regional and the global trading economy. Under the EIF umbrella, Tuvalu obtained its first ever Diagnostic Trade Integration Study (DTIS) in 2010, as the first step of the EIF process. The DTIS was formulated, with an implementation timeframe of 5 years, to provide the analytical basis for setting priorities related to trade development.

In such a context, five years after the implementation of the 2010 DTIS, UNDP was requested to assist the Government of Tuvalu in conducting an Update, in coordination with EIF agencies and interested donors. The DTIS Update (DTIS 2016) objective is to evaluate progress made since 2010 and assess the level of implementation of 2010 DTIS Action Matrix recommendations. The DTIS 2016 also highlights new trade opportunities and defines an operational strategy for the development of trade and integration of trade into national development plans. It builds on existing Government Policy plans, particularly the Te Kakeega III, adopted in March 2016, and the Trade Policy Framework (TPF) adopted in April 2016. The two fundamental documents were validated in July 2016, at a mega donor round table meeting. In view of the broad scope of the TPF, it was decided to keep DTIS 2016 concise and operational in providing a roadmap for the implementation of TPF recommendations, especially as regard four trade priority sectors presented in chapter 5, namely: agriculture, fisheries, tourism and labour mobility. In addition, the DTIS 2016 focuses on strategic areas not covered by the TPF, such as linkage between climate change and trade and the ocean economy with the prospects of deep seabed minerals. These two sectors of strategic importance for Tuvalu had to be included in the DTIS 2016.

The DTIS 2016 identifies as well priority small-scale projects to build up trade related and supply-side capacities to be funded under the EIF Tier 2 Window, which will have to be approved by the Government of Tuvalu and the EIF Board.

The DTIS 2016 Formulation team:

The DTIS 2016 team was composed of six experts working under the supervision and guidance of Ms. Celine Bacrot as Team Leader. Each expert was responsible for the formulation of a specific chapter, in the following manner: Ms. Celine Bacrot (chapter 1), M. José Maria Rubiato (Chapter 3), M. Pascal Dumas (Chapters 4), M. Rameshchandra Shah (Chapter 5) and M. Russell Howorth (Chapter 6). Special thanks go to the Pacific Islands Forum Secretariat for its contribution and the drafting of Chapter 2, by Mr. Zarak Khan, from the PIFS.

At the national level, the DTIS 2016 team worked closely with the National Trade Steering Committee and national counterparts from public and private sector, particularly within the Ministry of Trade, with Mr. Temate Melitiana, Permanent Secretary, MFATTEL, Ms. Toaiga Semisi, Acting Trade Officer,

and Mr. Ameir Mbonde, EIF International Trade Adviser. The team would also like to thank Ms. Lily Nuausala and M. George Vann for their precious assistance in organizing the missions of the DTIS 2016. The team also expresses its gratitude to UNDP staff for their support and assistance, in particular, Ms. Luisa Bernal of the Sustainable Development Cluster at UNDP Geneva and Mr. Patrick Tuimalealiifano at UNDP Fiji Pacific Regional Office.

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Also to be highlighted is the cooperation of development partners of Tuvalu, particularly the Embassy of Taiwan in Tuvalu, the Embassy of France in Fiji, the Australian High Commission in Fiji, the Suva offices of the Asian Development Bank, the European Commission, and the Pacific Community.

Last but not least, the team's gratitude to Tuvaluans for their warm and hospitable welcome.

Acronyms

ACP	African, Caribbean and Pacific
ADB	Asian Development Bank
ADF	Asian Development Fund
AGO	Attorney General's Office
AfT	Aid for Trade
APNL	Alpha Pacific Navigation Ltd
APTC	Australian-Pacific Technical College
ASA	Air Services Agreement
BID	Business and Investment Division, MFED
BPOA	Barbados Programme of Action
BRICS	Brazil, Russia, India, China and South Africa
BSP	Bank South Pacific
CAD	Civil Aviation Department, MCT
CBD	Convention on Biological Diversity
CFC	Community Fisheries Centre
CIF	Consolidated Investment Fund
CITES	Convention on the International Trade in Endangered Species
CMM	Conservation and Management Measure
CMS	Compliance, Monitoring and Surveillance
CoT	Cost of Telecommunications
CPA	Cotonou Partnership Agreement
CPI	Consumer Price Index
C-POND	Pacific Research Centre for the Prevention of Obesity and Non-Communicable Diseases
CPSC	Central Pacific Shipping Commission
CROP	Council of the Regional Organizations of the Pacific
CSD	Central Statistics Division
CSO	Community service obligation
DBT	Development Bank of Tuvalu
DFQF	Duty-free quota-free
DoF	Department of Agriculture
DoC	Department of Customs
DoL	Department of Labour
DoT	Department of Trade
DRD	Department of Rural Development, MHA
DTIS	Diagnostic Trade Integration Study
DWFNs	Distant Water Fishing Nations
E8	Non-profit international organisations promoting sustainable energy,
EBA	Everything But Arms
EDF	European Development Fund
EEZ	Exclusive Economic Zone
EGS	Environmental Goods and Services
EIB	European Investment Bank
EIF	Enhanced Integrated Framework
EKT	Ekalesia Kelisiano Tuvalu
ENTs	Economic Needs Tests
EPA	Economic Partnership Agreement
EU	European Union
EVI	Economic Vulnerability Index
FAO	Food and Agriculture Organisation
FCA	Funafuti Conservation Area

FDI	Foreign Direct Investment
FEMM	Forum Economic Ministers Meeting
FFA	Forum Fisheries Agency
FIC	Forum Island Country
FIIP	Fisheries Investment Incentives Policy
FNU	Fiji National University
FSM	Federated States of Micronesia
FTAs	Free Trade Agreements
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GSP	Generalized System of Preferences
HS	Harmonised System of Tariff Classification
IACT	Increased Agricultural Commodity Trade
ICAO	International Civil Aviation Organisation
ICT	Information and Communication Technology
IDA	International Development Association
IFRS	International Financial Report Standards
ILO	International Labour Organisation
IMF	International Monetary Fund
IMO	International Maritime Organisation
IP	Intellectual Property
IPPC	International Plant Protection Convention
IPRs	Intellectual Property Rights
ISA	International Seabed Authority
IT	Information Technology
ITA	International Trade Advisor
ITC	International Trade Centre
IUU	Illegal, Unreported and Unregulated
JICA	Japan International Cooperation Agency
JV	Joint venture
LDC	Least Developed Country
LMA	Labour Market Assessment
MCT	Ministry of Communications and Transport
MDGs	Millennium Development Goals
MFATTEL	Ministry of Foreign Affairs, Trade, Tourism, Environment and Labour
MFED	Ministry of Finance and Economic Development
MFN	Most Favoured Nation
MHA	Ministry of Home Affairs
MIRAB	Migration-remittances-aid-bureaucracy
MNRLS	Ministry of Natural Resources, Lands and Survey
MOCT	Ministry of Communications and Transport
MOEYS	Ministry of Education, Youth and Sports
MOH	Ministry of Health
MOPUI	Ministry of Public Utilities and Infrastructure
MSD	Marine and Shipping Department, MCT
MTC	Ministry of Transport and Communications
MTR	Mid-Term Review
NAFICOT	National Fishing Corporation of Tuvalu
NAP	National Aid Policy
NCC	National Co-ordinating Committee
NCDs	Non-Communicable Diseases

NEMS	National Environment Management Strategy
NES	National Export Strategy
NGOs	Non-government Organisations
NIP	National Indicative Programme
NLMP	National Labour Migration Policy
NPF	National Provident Fund
NSSD	National Strategy for Sustainable Development
NTDS	National Tourism Development Strategy
NTO	National Tourism Office
NTSC	National Trade Steering Committee
OCO	Oceania Customs Organisation
OCTA	Office of the Chief Trade Adviser
OECD	Organisation for Economic Cooperation and Development
OPM	Office of the Prime Minister
PAC	Pacific Access Category
PACER	Pacific Agreement on Closer Economic Relations
PACPS	Pacific ACP States
PASO	Pacific Aviation Safety Office
PBD	Planning and Budget Department, MFED
PCI	Price Control Inspector
PE	Public Enterprise
PERMU	Public Enterprise Reform and Monitoring Unit
PFTAC	Pacific Financial Technical Assistance Centre
PHAMA	Pacific Horticultural & Agricultural Market Access Program
PIASA	Pacific Islands Air Services Agreement
PICs	Pacific Island Countries
PICTA	Pacific Island Countries Trade Agreement
PIDP	Pacific Islands Development Program
PIFS	Pacific Islands Forum Secretariat
PIPSO	Pacific Islands Private Sector Organisation
PIRFO	Pacific Islands Regional Fisheries Observer
PITI	Pacific Islands Trade and Invest
PNA	Parties to the Nauru Agreement
PRTCBP	Pacific Regional Tourism Capacity-Building Programme
PS	Permanent Secretary
PRIP	Pacific Regional Indicative Programme
PTDF	Pacific Trade and Development Facility
PTI	Pacific Islands Trade and Invest
RSE	Recognised Seasonal Employer
RTFP	Regional Trade Facilitation Programme
RTM	Round Table Meeting
RTMAS	Regional Trademark Application System
SDE	Special Development Expenditure
SIA	Social Impact Assessment
SIDS	Small Island Developing State(s)
SIS	Small Island State(s)
SOE	State-owned Enterprise
SOPAC	Geoscience Division of the SPC
SPARTECA	South Pacific Regional Trade and Economic Cooperation Agreement
SPC	The Pacific Community
SPMS	South Pacific Marine Services
SPREP	Secretariat of the Pacific Regional Environment Programme

SPTO	South Pacific Tourism Organisation
SWAT	Solid Waste Agency of Tuvalu, MHA
SWOT	Strengths, weaknesses, opportunities, threats
SWP	Seasonal Worker Program
TANGO	Tuvalu Association of Non-Governmental Organisation
TCEs	Traditional Cultural Expressions
TCRBP	Tuvalu Customs Revenue and Border Protection
TCT	Tuvalu Consumption Tax
TEC	Tuvalu Electricity Corporation
TK	Te Kakeega; traditional knowledge
TMNP	Temporary Movement of Natural Persons
TMS	Tuvalu Maritime Services
TMTI	Tuvalu Maritime Training Institute
TNASP	Tuvalu National Agriculture Sector Plan
TNBSAP	Tuvalu National Biodiversity Strategy Action Plan
TNCW	Tuvalu National Council of Women
TNPSO	Tuvalu National Private Sector Organisation
TOSU	Tuvalu Overseas Seafarers Union
TPF	Trade Policy Framework
TPO	Tuvalu Post Office
TTF	Tuvalu Trust Fund
TTFAC	Tuvalu Trust Fund Advisory Committee
TTDC	Tuvalu Tourism Development Corporation
TTO	Tuvalu Travel Office
TVET	Technical and vocational education and training
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNFCCC	United Nations Framework Convention on Climate Change
UNWTO	World Tourism Organisation
US	United States
USP	University of the South Pacific
VAT	Value Added Tax
VCO	Virgin Coconut Oil
VDS	Vessel Day Scheme
VLH	Vaiaku Lagi Hotel
VMS	Vessel Monitoring System
WCO	World Customs Organisation
WCPFC	Western and Central Pacific Fisheries Commission
WTO	World Trade Organisation

Executive summary

The DTIS 2016 presents an innovative trade strategy built upon the vision of prosperity and economic growth outlined in the Te Kakeega III (TKIII), the National Development Plan for Sustainable Development 2016-2020, adopted in March 2016. The DTIS 2016 also sets out a roadmap for implementation of the recommendations of the Trade Policy Framework (TPF). Confronted to many constraints, Tuvalu has no other choice than preserving its domestic assets, promoting private initiative, protecting its land and its agricultural potential, empowering its population by increasing education and capacity to compete for jobs overseas, and exploring its ocean space based on efficient and sustainable fisheries and deep seabed minerals.

Macroeconomic environment and regional integration

Over the recent years Tuvalu has enjoyed an increasing GDP growth rate (up to 2.5 percent in 2015) and generated a budget surplus with domestic revenues up to AU$45.2 Million in 2015. This surplus stems primarily from fishing licensing fees (AU$17 million in 2015). The Tuvalu Trust Fund has also started paying return from investment (AU$8.7 million). In addition, a weak Australian dollar has benefitted Tuvalu in its foreign income receipts denominated in American dollars. These favourable environment coincided with public financial management reforms aimed at improving public finance performances and increasing tax revenue. Other revenue are the licenses for the internet domain .tv (AU$6.3 Million) and official development assistance (AU$11 Million). Remittances were also very high amounting to 15 percent of the GDP before 2008. But, the global financial crisis hit strongly the maritime sector and, with it, job opportunities for Tuvaluan seafarers, and their relatives income. As the flow of migrant workers is now increasing again, more remittances are expected but this only reflects a high volatility upon which Tuvalu has little influence. A shift in the drivers of economic growth towards a more tangible assets based economy is required to ensure stronger sustainability.

Moreover, while Tuvalu has a strong fiscal position, the impact on the population is limited. With an unemployment rate of 39.6 percent, a large share of the Tuvaluans remains excluded from productive sectors. The living conditions remain basic with the minimum standards for social services. Poverty rates have increased from 16.5% in 2004-2005 to 26.3% in 2010, especially in the outer islands. The MDG 1 on "Alleviating Poverty and Hunger" is far from being achieved. As a result, Tuvalu is highly-dependent on foreign aid with development assistance representing about 20 percent of total budget. An increasing allocation of domestic revenues is recommended towards human and social development. Creative solutions will work only if time and efforts are aimed at promoting inclusive pro-poor growth supported by a regional strategy to position Tuvalu in a regional value chain. As Tuvalu is too small to rely only on itself, a regional approach seems to be one that would not only contribute to sustainability but also may help raise Tuvalu's profile in regional and international fora. Relevant regional integration developments in recent years include PACER Plus and the Framework for Pacific Regionalism. Another milestone for Tuvalu will be the Pacific Islands Forum Meeting to be hosted by Tuvalu in 2019.

Private sector and investment

As set out in the TKIII, a sustainable trade strategy should be developed and implemented whereby the livelihoods of the population would come first with a greater involvement of the Tuvaluans in the making of economic activity and growth. So far there is limited progress in improving Tuvalu's business environment. Private sector is still under-developed and faces constraints related to the inherent situation of Tuvalu: remoteness causes high transportation costs and isolation, and smallness causes absence of economies of scale increasing even more transaction costs. The intervention of the Government is therefore crucial in creating an enabling and favourable business climate; by reducing taxes and barriers to investment. Thus, taking an innovative approach to exploring growth opportunities, including strengthening education and training, particularly in the areas of financial literacy and

business skills will be critical. The forthcoming Business Incubator promoted by the Government should help address these weaknesses.

Transport, trade facilitation and connectivity

Isolation and remoteness impacts on the competitiveness of Tuvalu. In order to reduce these constraints, a close cooperation with the regional organizations such as the Pacific Community Transport Programme is the key to connect the country with the regional markets. Being dependent on a single airline and very limited maritime routes, the country can take advantage of the regional agreed instruments to improve the domestic transport services. In addition, the development of inter-islands transport services is a precondition to trade development and building national value chains across the entire territory, but also a proper conduit to reduce the double effect of excluding outer islands from regional and international markets. The improvement of the customs system and the implementation of trade facilitation measures are also needed to accompany the ambitious trade agenda in which Tuvalu has engaged as outlined in the TKIII.

Linkage between climate change and trade

Tuvalu is highly vulnerable to climate change. The last Tropical Cyclone PAM illustrates the type of vulnerability the country has to face. According to the World Bank, the costs of damages caused by the TC Pam amounted to more than 30 percent of the GDP. Scientific projections such as the UNFCCC studies show that the country will have to face in the medium and long run more intense tropical cyclones with increasing intensity and frequency of extreme rainfall days, increased sea and air temperatures as well as rising sea levels. As declared in the Paris Declaration, climate change will lead to the inundation of the low-lying islands such as Tuvalu. The Member States agreed on aiming to limit global warming to less than 2°C, and ideally 1.5°C. However, Tuvalu will have to face the effects on its land with coastal erosion, its fishing potential with ocean acidification, its agricultural capacity, its tourism services and most of all livings conditions of its population. This will need doubled efforts to increase adaptation measures (in addition to mitigation) which should not only involve environmental sector but also education and vocational skills, introduction to agricultural products more resilient to the changing climate and the development of innovative trade markets such as the deep seabed minerals and eco-tourism.

Sectoral trade: Agriculture, Fisheries, Tourism and Labour Mobility

Identified by the TPF as trade priority sectors, agriculture, fisheries, tourism and labour mobility are considered to be the engine of Tuvalu's trade strategy. Given the existing constraints and small potential for trade in the country, Tuvalu should pursue a niche market based on the principle of value addition in low volume targeting high-end export market responding to the demand for organic products and exotic brands. By connecting sectors such as tourism and agriculture- tourism being the engine and agriculture being the food supplier-, it can create positive externalities which will spill-over on the whole economy and the well-being of the population. However, efforts in education, marketing and business skills acquisition, access to finance and infrastructure improvement are key to the development of these niche markets and its integration into regional and global value chains.

Agriculture: Tuvalu is not self-sufficient in agricultural production and development projects focus on meeting at least 50% of food requirements. Agricultural export potential is coconut-based such as coconut virgin oil and copra. The Government of Tuvalu developed in 2013 the Agricultural Strategic Plan targeting food security, employment and biosecurity. One priority is to develop organic farming and transform the agricultural production of Tuvalu into organic processes so as to tap into the regional markets for export products. A regional certification system should be encouraged so as to avoid the cost of requiring certifier officers from Fiji or Samoa. However, the significant obstacles in logistics will encourage the development of a niche market with improved branding and marketing in order to increase value addition. Last, it is necessary to broaden the genetic base of traditional crops such as breadfruit and pandanus and to improve genetic research on traditional food crops and fruit trees for a

better adaptation to the new conditions of soil salinity, of increasing air temperature or drought events, severe wind conditions, etc.

Fisheries: It is the most important natural resource for Tuvalu, the basis of the Tuvaluan traditional diet with the highest consumption of tuna per capita in the world and fishing licensing fees rank as the first source of revenue of 2015 budget with about 45%. The adoption of the Vessel Days Scheme (VDS) under the initiative of the Parties of the Nauru Agreement (PNA) has helped increase fishing revenue of the PICs and regulate the fishing activity on the fishing vessels in a sustainable way. Fishing in the EEZs of Tuvalu offers huge opportunities for fishing companies, however the Government of Tuvalu does not receive much in terms of employment, technology transfers and capacity building from these foreign companies. Moreover, the lack of monitoring capacity of the country on fishing vessels has led to illegal, unreported and unregulated fishing. Tuvalu should increase monitoring and surveillance on the fishing vessels and increase the number of observers per vessel. Recently, the Government of Tuvalu has engaged into the reform of the fishing regulatory framework to improve the management of the fisheries sector in the EEZs and enhance the conservation and preservation of the marine resources in a sustainable way. It also aims at ensuring that the country fully benefits from fishing through job creation and economic growth. The trade potential lies upon the recruitment of seafarers on each fishing vessel and the introduction of fish preservation and processing in the country.

Tourism: In 2014, the Government of Tuvalu developed the National Tourism Development Strategy (2015-2019). The geography and beauty of Tuvalu make it a high profile for tourism. However, logistics and lack of adequate infrastructure prevent from implementing a long-term strategy which could sustain the economy. Indeed, Tuvalu as "the sinking Island" could represent a potential for a niche-based ecotourism with low impact and high-value tourism. However, tourism as a primary sector and engine for growth is unlikely, but it could secondary sector with some spill over benefits to other sectors. To realise any benefits from the tourism sector, the Government will have to accompany the private efforts by securing investment and providing efficient transportation, and skilled labour force. Tourism niche market could take the form of luxury mobile camps or eco-tourism lodges. The recent cruise sector development in the Pacific Ocean and diving tourism could also be a niche and would not require major investment as the passengers of yachts usually stay aboard at night. It could therefore imply the development of a small marina supplying and maintaining yachts with catering and entertainment services showcasing arts, handicrafts and cuisine of the Polynesian culture.

Labour Mobility: Employment is a serious issue in Tuvalu with 39.6 percent (2012) of the labour force unemployed, especially the young population. By tradition, Tuvaluans have been working as seafarers on merchant ships all over the world providing remittances to their families back home. Labour mobility is considered to be an opportunity for hundreds of young Tuvaluans, (TPF, 2016,). The National Labour Migration Policy and the Labour Bill have been adopted. Unilateral Labour migration schemes developed by New Zealand (Recognized Seasonal Employer) and Australia (Seasonal Worker Program) allow Tuvaluans to acquire skills and find employment on both temporary and long-term basis. These mechanisms also provide opportunity for Pacific Islands to solve supply constraints on the labour market. However, most of the Tuvaluans have been unable to do so due to the lack of transport, information and communication and their geographical distance from New Zealand. In order to fully benefit from these labour mechanisms, the Government of Tuvalu has to implement a pro-active education and vocational training strategy to ensure that applicants to these mechanisms can compete with the other Pacific Islands. Efforts should be made in sectors where labour demand is high such as hospitality, medical and age care sectors. It is also recommended that Australia and New Zealand set up some preferential access to Tuvalu workers by increasing permits taking into account the level of constraints faced by Tuvalu compared to other PICs. This would have a high impact on the economy. A single income can support up to 25 people in Tuvalu as stated by ILO studies in the Pacific Islands.

Blue Economy/Oceans Economy and Deep Seabed Minerals

With an ocean/land ratio of Tuvalu of 28,915: 1, the future of trade development of Tuvalu seems definitely based on marine resources. Though the concept of "Blue economy / Oceans economy" is relatively new, it is the way forward for SIDS to promote economic growth, following an "ocean space approach". Tuvalu, is among the pioneers which have been working on setting up an appropriate regulatory framework, the "Tuvalu Seabed Mineral Resources Act" enacted in 2014 with a Corporate Plan (2014-2016) highlighting the potential of deep sea minerals. The legislation requires the involvement of the coastal communities through consultations process prior to the approval of mining projects within Tuvalu's waters and for any mining project that Tuvalu may sponsor in international waters "The Area" under the jurisdiction of the International Seabed Authority. In addition, Tuvalu has finalized the definition of its maritime boundaries with its neighbours. In order to complete a strategy based on marine space resources, Tuvalu needs now to assess its resource and then formulate a seabed minerals resources management plan. The seabed of Tuvalu EEZs is known to contain both manganese nodules and cobalt rich crusts but these are still poorly understood. The metals contained in seabed minerals are needed in the ICT industry thus offering significant potential business opportunities. The development of the marine space activities will follow a precautionary approach so as to preserve and protect the marine environment.

As a conclusion

Tuvalu will greatly benefit from playing regionally to defend its interests, particularly in air connectivity, export strategy and the protection of fishing resources. The SAMOA Pathway is, in that regard, a progress in the protection of the SIDS as "a special case" for sustainable development due to their unique and particular vulnerabilities. Indeed, Tuvalu is a special case which forces to think out of the box for alternative and creative solutions based on the development of domestic capacity with a strong focus on education and vocational skills, private sector empowerment and regional integration. While Tuvalu is among countries to suffer most from the impacts of climate change, at short term and from a trade perspective, this might not yet be a game changing issue. On the short-run the country is in an urgent need for alleviating poverty and enhancing private sector. However, over time, effects of climate change will be felt on a larger scale, and the sustainability and resilience of Tuvaluan trade will be crucial as highlighted in SDGs 13, 14 and 15.

Tuvalu could champion these SDGs by promoting an innovative, resilient and inclusive development strategy (for instance, National SDGs road map) that could become an example to follow for the other SIDS. Time is of essence in Tuvalu and long-term planning is an absolute priority hence the update of the trade development strategy and the inclusion of this new configuration.

Note on the process of the Tuvalu DTIS Update 2016

Tuvalu and the DTIS 2010

Tuvalu joined the Enhanced Integrated Framework in 2007. As a milestone in trade mainstreaming, the Diagnostic Trade Integration Study (DTIS) was formulated in 2010 and validated in December 2010. At that time, the DTIS identified tourism as the sector with the biggest future potential for growth. Tourism and labour were the services exports on which Tuvalu could develop its trade strategy in addition to the traditional trading sectors, namely fisheries and agriculture. The DTIS 2010 was organized around two sections and seven chapters as follows:

I. Cross-Cutting Issues
   a. *Macroeconomic environment*
   b. *Business and investment*
   c. *Trade policy and trade facilitation*
   d. *Human development and environment*

II. Sectoral Studies
   a. *Tourism*
   b. *Fisheries*
   c. *Agriculture*

The DTIS Action Matrix comprised 55 actions recommended and among them 14 priorities.

The EIF Tier 1 "Tuvalu Trade Capacity and Institutional Strengthening Project"

In addition to the DTIS, the EIF assisted Tuvalu in the national implementation arrangements (NIAs) project and development capacity through the Tier 1 "Tuvalu Trade Capacity and Institutional Strengthening project" approved by the EIF Board on 14 December 2012. Its implementation started in February 2013 for a period of three years. The EIF Tier 1 project comprises four results:

- ✓ Result 1: *Capacity of the DoT, NTSC and broader national stakeholders, including the private sector, for trade policy formulation, implementation and assessment strengthened*: The Department of Trade (DOT) was equipped, refurbished and staffed to accommodate the EIF NIU functions. The DoT had two substantive positions, a Trade Officer and an Assistant Trade Officer, and two EIF project officers. An International Trade Advisor was recruited for two years. The National Trade Steering Committee (NTSC) was revised in composition and its terms of reference. However, at the time of this report, there were one trade officer and one project officer.
- ✓ Result 2: *Capacity of the DoT and the NTSC to mainstream trade in Tuvalu's national and sector policies, plans and budgets, drawing on priority recommendations in the DTIS Action Matrix enhanced*: Series of awareness-raising and capacity building workshops on trade mainstreaming into the national development plan, Te Kakeega II (2005-2015) were held in 2014.
- ✓ Result 3: *Dialogue with development partners on Aid for Trade enhanced, in line with the Paris Declaration on Aid Effectiveness*: Consultations were made with development partners who confirmed their interest and willingness in assisting Tuvalu's trade efforts.
- ✓ Result 4: *Programme management, monitoring and evaluation carried out effectively*: these functions are being undertaken by the UNDP MCO based in Suva, Fiji, with regular missions in Tuvalu.

In 2014, the Government of Tuvalu initiated the formulation of the Trade Policy Framework (TPF) under the EIF Tier 1 project. The Trade Policy Framework (TPF) is a great achievement for the Government of Tuvalu. Though the official launching of the TPF will be held at the time of this present document, the Government has already approved and endorsed the main recommendations of the TPF. Four core sectors have been identified as international trade priority sectors: two sectors related to trade in goods (Fisheries and Agriculture) and two sectors related to trade in services (Tourism and Labour

Mobility). Since these four trade focus areas have been approved by the Government, the DTIS Update included them as trade priority sectors. One additional priority sector is to be included as trade priority sector and is presented in the DTIS 2016: the Blue Economy/Oceans Economy and Deep Seabed Minerals.

Lessons from the DTIS 2010

The DTIS 2010 is a fully fledged document which covered extensively all the trade aspects of Tuvalu. Though it is still used as a reference document for the staff of the Ministry of Trade, it was poorly mainstreamed in the other sectors' national development strategies. Dissemination was also lacking which added to the high staff turnover in the government institutions highly reduced the benefits of the DTIS. The implementation of the action matrix is not complete. Most of the actions which have been implemented were thanks to the EIF Tier 1 funding. However, the implementation of the EIF Tier 1 "Tuvalu Trade Capacity and Institutional Strengthening Project" only started in February 2013, i.e., three years after the validation of the DTIS losing the momentum of such milestone. The positive result of the DTIS is the establishment of the consultation process between the public and private sectors within the National Trade Steering Committee (NTSC). The NTSC drives the formulation and implementation process of the trade development strategy in a quite regular and efficient manner. However, the main lesson of the DTIS process is the continuous need for capacity building. The high turnover of the staff members of the Department of Trade is a significant constraint for any technical assistance programme based on capacity building since there is no accumulation of knowledge and skills. While the EIF Tier 1 funding allowed the Department to build a full expert team on trade issues, the team has reduced to two staff (a senior trade officer should come back in December 2016). Therefore, little capacity to monitor and coordinate, lack of institutional memory and technical expertise may be serious impediments to trade development in Tuvalu in the short and medium term and should be identified as priority in the EIF Tier 2 project.

The DTIS 2016 Process

The purpose of the DTIS Update is to evaluate what has been done since the DTIS 2010 and the level of implementation of the recommendations of the DTIS Action Matrix after five years and achievements in trade development. The DTIS Update of Tuvalu defines an operational strategy and recommendations. Indeed, the DTIS 2016 comes after major work undertaken by the Government of Tuvalu, particularly the Te Kakeega III and the TPF. Therefore the DTIS covers the most strategic chapters including an operational approach which complements the analysis and recommendations already made in the above-mentioned national documents. In each chapter, references are made to the latter so as to ensure policy coherence. In addition, major development partners and donors have made thematic studies upon which the DTIS 2016 is also built.

The DTIS 2016 was led by the Government of Tuvalu in close cooperation with other stakeholders facilitated by a team of consultants and UNDP. Close coordination between the DTIS 2016 and the TKIII elaboration processes was ensured with a view to promote the integration of the preliminary findings of the DTIS into the TKIII.

Introduction

Tuvalu is a small country of the Pacific Ocean composed of nine islands over an area of 911,000 sq. km. The land territory of Tuvalu is 26 sq. km. The population of Tuvalu is 10,823 of whom half of it lives on the main Island of Funafuti. The country faces an overpopulation on the main island while the other half is spread over the other islands.

The economy of Tuvalu is dominated by the public sector representing over 80 percent of GDP. The economic structure is highly based on services (70 percent of GDP[1]) and agriculture which only provides livelihood and food security to the local population (24.5 percent) because of the smallness of the islands and very non-fertile soils. Industry based on copra and fishing is under-developed (5.6 percent) due to the constraints related to high transaction and transport costs. Tuvalu is considered a non-trading nation. The country relies on external and volatile revenues, i.e., fishing licences, Tuvalu Trust Fund and development partners' assistance. Therefore, Tuvalu is extremely dependent on intangible assets controlled by external sources making its economy highly vulnerable.

In 2010, the Diagnostic Trade Integration Study of the Enhanced Integrated Framework was formulated and adopted. Several priority actions were defined for implementation. Since 2010, Tuvalu engaged in many reforms particularly in public finance which led to a strong fiscal position. Favourable macroeconomic conditions allowed to generate more revenues from the Tuvalu Trust Fund. Developments in the regional dynamic also brought new perspectives and opportunities, particularly in the fisheries sector with the adoption of the Vessel Day Schemes. Regional integration through trade agreements and the emergence of a regional platform namely the Framework for Pacific Regionalism has contributed to the integration of Tuvalu into the global and regional value chain. It also facilitated the adoption of a common position to challenges such as climate change that affect most of the Pacific Islands. Indeed, Tuvalu is one of the most affected by climate change branding itself as the "sinking island". Though the situation on a climatic level is worrying, the recent highlight from the international community and the adoption of the Paris Climate Change Agreement are definitively significant and positive signals for Tuvalu as increased support from development partners is expected in the medium and long-term.

The DTIS 2016 looks at these recent developments and assess the progress in the implementation of the priority actions of the DTIS 2010. The DTIS 2016 also explores new trade opportunities so as to align with the strategic decisions made by the government of Tuvalu to develop domestic economy and the development of private sector as outlines in the recently adopted Te Kakeega III – National Strategy for Sustainable Development (2016-2020). The DTIS 2016 therefore develops recommendations and roadmap for niche sectors based on high value products and services responding the supply-side capacity of the country. The DTIS 2016 is also based on the recommendations adopted within the Trade Policy Framework (officially validated in July 2016) so as to ensure coherence and harmonization in trade policies. Thus, each chapter of this 2016 DTIS makes references to both Te Kakeega III and Trade Policy Framework as well as in the identification of the priority actions. In particular, two new topics (not referenced in the TPF) related to trade development are added to the DTIS 2016. These are: the linkage between climate change and trade and the ocean economy with the deep seabed minerals. These two topics are of major importance for Tuvalu and trade development, hence their inclusion as priority focus in the DTIS 2016.

The DTIS 2016 is composed of three pillars. The Pillar 1 on Trade institutional and macroeconomic environment looks at the macroeconomic and institutional environment, trade policy, and trade agreements and regional integration (chapter 1); business climate, investment and private sector development (chapter 2); and transport, trade facilitation and connectivity (chapter 3). The Pillar II

[1] Asian Development Bank, Key Indicators for Asia and the Pacific 2015

focuses on the linkage between climate change and trade (chapter 4), the sectoral trade priority sectors, i.e., Agriculture, Fisheries, Tourism, and Labour Mobility, as identified in the Trade Policy Framework (chapter 5); and the emerging prospects of the ocean economy and deep seabed minerals (chapter 6). The Pillar III is the action matrix composed of all the priority actions.

PILLAR 1: TRADE INSTITUTIONAL AND MACROECONOMIC ENVIRONMENT

Chapter 1: Macroeconomic and Institutional Environment / Trade Policy / Trade Agreements and Regional Integration

A. Background

Tuvalu is a small Pacific Island Country which faces all the constraints of the "Insularity, Smallness and Remoteness" syndrome. In addition, Tuvalu is one of the most affected countries by climate change which makes the already harsh natural conditions of the archipelago even harder. Indeed, the absence of fertile soil and freshwater limit trade opportunities for Tuvalu while sea level rise and increasing intensity and frequency of cyclones tend to reduce sustainability of long-term investments. In this context, macroeconomic environment plays the role of safeguard for both economy and welfare of the population in front of the highest degree of economic and human vulnerability. Trade as an engine for growth should help increase the capacity of the country to achieve sustainability and prosperity even though trade options and diversification are limited. Finally regional integration is definitely a key which could help Tuvalu increase competitiveness by connecting its small size economy with an intra-regional market and beyond, with the growing Asian market.

The chapter is structured around six sections respectively concerning the policy coherence and trade mainstreaming, the implementing steps taken since the 2010 DTIS, the economic performances and SDGs, trade performances and balance of payment, market access and regional integration and last the way forward and recommendations section.

It is worth noting that this chapter takes into account the extensive work and analysis of the Trade Policy Framework on these above mentioned issues, hence the decision to reduce the size and scope of this chapter so as to avoid duplication in the two documents.

B. Policy coherence and trade mainstreaming

The Te Kakeega III, the National Sustainable Development Strategy of Tuvalu, adopted in March 2016, sets the goals of a sound macroeconomic management and policy for the economy bringing growth and prosperity based, among others, upon private sector development, overseas employment and export trade. More specifically, the TK III outlines seven strategies related to growth and prosperity as follows: i) strengthen and develop sound macroeconomic management; ii) ensure proactive economic development policies; iii) improve and strengthen partnership and cooperation with development partners; iv) effective and stable financial system that enhances economic growth; v) explore and exploit trade opportunities; vi) revive the copra industry and explore opportunities for producing alternative coconut products; and vii) strengthen development and marketing of Tuvalu eco-tourism industry.

Therefore, the TKIII maintains the traditional economic strategy based on fisheries and development partners' assistance, yet a shift towards niche market to export added-value products such as organic agricultural products and the development of services industry is highlighted to allow Tuvalu increase its growth base.

This policy orientation was formulated in the Trade Policy Framework (TPF) in 2015 which provides the strategic vision for a sustainable development based on economic resources to promote domestic and international trade. The TPF was among the recommendation of the 2010 DTIS. The TPF identified four core sectors: Agriculture, Fisheries, Tourism and Labour Mobility. Fisheries and labour mobility through remittances are the main source of revenue along with ODA. Agriculture and tourism are the trade sectors where value addition can be generated by investing in low volume but high quality goods

and services so as to create niche markets. By doing so Tuvalu could become a trading nation with an export trade sector thus reinforcing its trading position at domestic and regional level. The TPF also stresses upon the need for increasing participation of Tuvalu into regional and international trade agreements and trade relations with traditional and non-traditional trading partners in order to reduce the supply-side constraints and connect to value chains. Last, the need for capacity strengthening in number and expertise has been mentioned as a major constraint for trade development and trade policy implementation.

Trade mainstreaming is also a key priority of the TPF as the lack of cooperative and consultation mechanisms between trade and the others sectors could undermine the overall policy planning and implementation. In this regard, the TK III integrates trade in several chapters making trade an essential tool and catalyst for sustained economic growth and equitable social welfare.

B.1. Implementation of the 2010 DTIS Recommendations

The 2010 DTIS identified the following priority actions in macroeconomic environment and trade policy:

Macroeconomic environment
1.1. Align development objectives more closely with the actual activities of government.
1.2 Support the strategic review of the various possibilities for the restructuring of state-owned enterprises (SOEs).
1.3 Develop a trade policy, based on the DTIS, prioritising tourism and other services exports.
1.4 Consider linking debt and budget deficit objectives to the economic cycle.
1.5 Support the ongoing work by the Secretariat of the Pacific Community (SPC) in statistics.

Trade policy
3.1. Recruit three full time IF staff.
3.2. Appoint a donor facilitator.
3.3. Support private sector and civil society involvement in trade policy
3.4. Avoid attending trade meetings with little commercial benefit for Tuvalu
3.7. Consider discussions toward a bilateral trade agreement with Taiwan

Since 2010, priority actions related to macroeconomic environment have been achieved except for the actions 1.2 and 1.5 which remain unsatisfactory. The state-owned enterprises (SOEs) reform is pending and consultations about privatisation and public-private partnerships (PPPs) are still being discussed largely because of the liabilities and inefficiency of these companies. The chapter 2 on private sector and investment covers further the SOEs. The action 1.5 remains a major obstacle in the analysis and monitoring of the public finance and trade performances of Tuvalu. The latest IMF Article IV report dated of August 2014 mentioned the same recommendation about the need for technical assistance from the Pacific Financial Technical Assistance Centre (PFTAC). The other actions have been implemented with positive results particularly in terms of public finance management and debt reduction as explained later in this chapter.

The priority actions focusing on trade policy have been implemented with mixed results particularly in terms of sustainability. Capacity of the staff working in the Ministry of Trade is limited and highly dependent on the EIF funding. As the EIF funding is expected to terminate after the implementation of the Tier 2, there are some concerns about the national capacity to follow up and guide the implementation of the ambitious agenda that the country has identified in its trade policy framework. At the time of the 2016 DTIS main mission, there were one project officer, two assistants and one international technical assistant. Yet, the EIF funding has contributed in strengthening the capacity of

the trade staff to ensure a better coordination and management of its trade resources and the regional commitments that Tuvalu has engaged in over the last years. Equipment has increased within the Department of Trade. The need for continuing this process is therefore a priority for Tuvalu.

Recommendation 1: Ensure capacity and ownership within the Department of Trade in front of the trade development agenda of Tuvalu for the next few years.

The action 3.3 (*Support private sector and civil society involvement in trade policy*) remains challenging. Though relations with between the Government of Tuvalu and the private sector have improved particularly thanks to the establishment of the annual trade event, the Talofa Trade Fair in 2013, the consultation mechanism in trade policy is not automatic. Private sector is underdeveloped due to intrinsic nature of Tuvalu as a small PIC but also the absence of enabling environment to facilitate investment and entrepreneurship. In that regard, the project of the Tuvalu National Private Sector Organization (TNPSO) backed by the Government of Tuvalu to set up a business incubator would give the opportunity for both public and private sectors to work together.

Last the action 3.4 has been outdated by the current regional dynamic that started few years ago with the establishment of regional initiatives such as the Framework for Pacific Regionalism and the participation in regional trade agreements upon which Tuvalu can rely to increase visibility, assistance and above all, opening of new trading markets. In this context, the support of the Government of Taiwan, as per the action 3.7, has been extremely helpful providing support in many sectors such as agriculture, education and health.

C. Economic performances and SDGs

C.1. Economic performances

The GDP growth rate was 2.5 percent in 2015 and has been increasing since its level of 0.2 percent in 2012. Tuvalu's GDP growth rate is anticipated to rise up to 4 percent in 2016 with a slowdown down to 2 percent in 2017-2018, (Tuvalu National Budget, 2016). Over the last five years, Tuvalu has recorded government budget surplus largely due to fishing licences. The adoption of the Vessel Day Scheme (VDS), established by the Parties to the Nauru Agreement (PNA), increased the revenues of Tuvalu from fishing. The VDS is based on a daily fishing price ensuring better management and tracking of fishing volumes. Fisheries represent about 50 percent of the 2016 budget with a projected revenue of AU$31.4 Million. The other sources of revenue is Official Development Assistance mostly from the Republic of China (Taiwan), Australia and New Zealand for about AU$12 Million, the internet tv.domain for AU$ 6.3 Million, the Tuvalu Trust Fund distribution for AU$4.7 Million and taxation for AU$7.3 Million. The depreciation of the Australian dollars against the US dollar also helped increase the surplus since the revenues from fishing licences and tv.domain are denominated in US dollars.

The economy of Tuvalu is dominated by the public sector representing over 80 percent of GDP. Tuvalu economic structure is highly based on services (70 percent of GDP[2]) but also agriculture which provides livelihood and food security to the local population (24.5 percent of GDP). Industry based on copra and fishing is under-developed (5.6 percent of GDP) due to the constraints related to high transaction and transport costs. Therefore, Tuvalu's economy mainly relies on external and volatile revenues, i.e., fishing licences and development partners' assistance while the government and state-owned enterprises are the main provider of employment in the country.

Tuvalu received assistance from the IMF, World Bank and the Asian Development Bank, to reform and strengthen the public finance management and its fiscal position. The projects targeted a reorientation

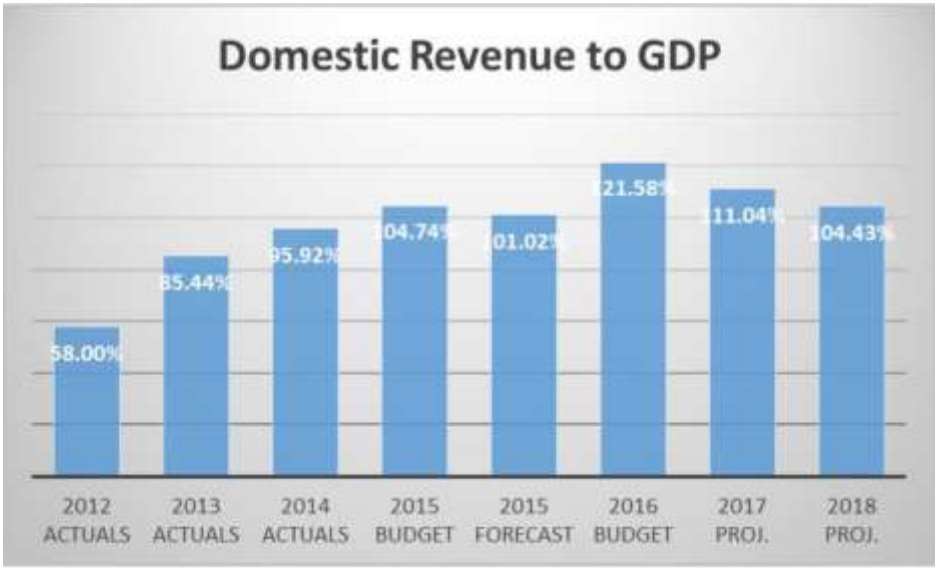
[2] Asian Development Bank, Key Indicators for Asia and the Pacific 2015

and rationalization of the Government budget. The national budget is guided by the Medium Term Fiscal Framework providing a forecast of expected revenue and current expenditure commitments. A Policy Reform Matrix (PRM) was also formulated identifying the priority projects to strengthen fiscal framework and reform the public sector so as to ensure efficiency in the state-owned enterprises. As a result, public financial management reforms have succeeded in, among others, increasing tax collection thanks to an intense recovery work of past outstanding tax, increasing the Consolidated Investment Fund (CIF) and achieving budget surplus.

However, as said in the IMF Report[3], in spite of this strong fiscal position, Tuvalu domestic economy remains vulnerable partly due to the weakness of its banking sector and state-owned enterprises which have contingent liabilities that will affect public finance on the long-run. To this end, IMF recommended to invest in large projects which could boost the economy and spread the benefits to the private sector. The Tuvalu Cooperative Society (TCS), established in 1975, could have played that role but mismanagement and monopoly situation detrimental to the local private sector and a high debt level led to the end of its operations in 2010. However, the Government of Tuvalu is still committed to revive the TCS though the "revival of the TCS would require 10 percent of GDP to clear arrears and regain market share"[4]. Thus to make it work, the TCS should link up with the private sector and ensure complementarity through partnerships between the TCS activities and the domestic producers and retailers of Funafuti and the outer islands. Yet in 2016, the situation has slightly improved with several large infrastructure projects (rehabilitation of building governments, etc.), financed by development partners, implemented or planned to be implemented over the short and medium term. This creates some stimulus to the economy, particularly in the construction sector providing jobs to workers such as the seafarers unemployed since the financial crisis of 2008.

As a result, short-term projections are quite positive and the 2016 budget was formulated on very ambitious assumptions, particularly the increasing revenues from fisheries stemming from the US Treaty signed with the Forum Fisheries Agency (FFA). The 2016 budget was increased by 27 percent compared to the 2015 budget. This fiscal expansion is aimed at boosting the economy by financing public investments in health and education as well as tourism creating positive externalities in the country.

Figure 1.1: Domestic Revenue to GDP



Source: Government of Tuvalu, 2016 National Budget

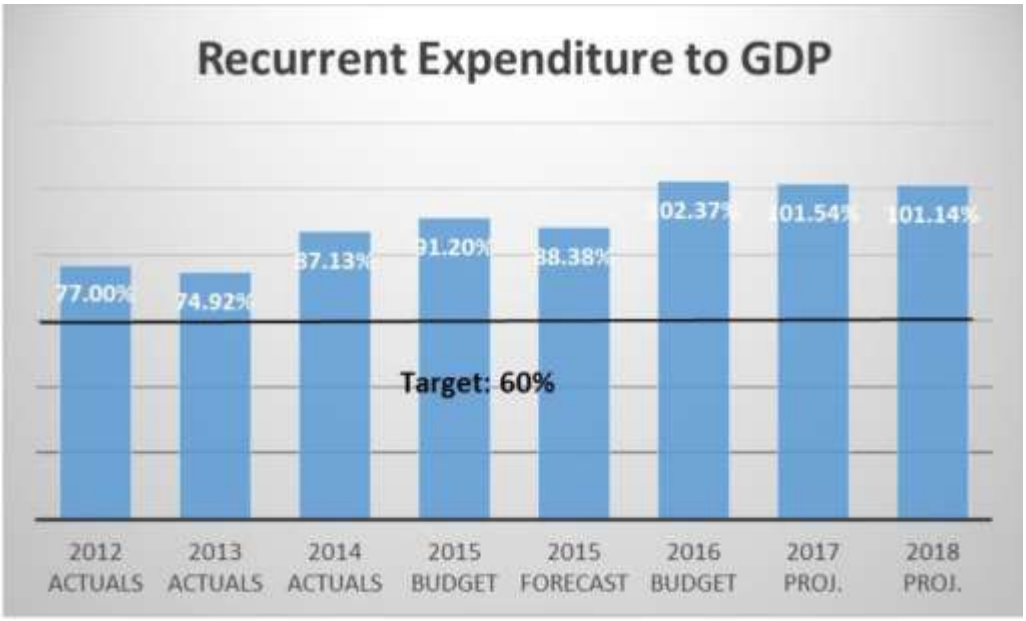
[3] International Monetary Fund, Article IV Consultation Report, August 2014
[4] Ibid

The 2016 budget projects domestic revenues to be at AU$54.6 Million while total expenditures are estimated at AU$72.2 Million. The increase in expenditures comes from the increase of 6M in recurrent expenditures, specifically the staff salaries, the Tuvalu Medical Treatment Scheme (TMTS) and scholarships for students living overseas. These expenditures have been under scrutiny by the development partners since they largely affect the sustainability of the national budget. Indeed, Tuvalu's economy relies on a predominant public sector up to 85 percent of GDP materialized in the budget by high level of wages and social assistance package to its population. However, these schemes have proven quite expensive with some cases of mismanagement particularly as regard the Medical Treatment Scheme which repatriates any Tuvaluan overseas for medical care. Some alternative solutions such as the development of a health sector in Tuvalu would be more cost effective than sending its population abroad for periods which can be up to 2-3 years. Beyond the human aspect, an assessment and audit of these two schemes seem necessary.

Recommendation 2: Beyond the human aspect of social protection and education support, audit the social schemes for better financial sustainability and efficiency with scenarios of in-country alternative solutions.

The budget deficit of AU$6 Million resulting from the budget expansion will be funded by a draw down from the savings of the CIF. Inflation, yet relatively low, is expected to increase along with the expansion of the budget (1.4 percent in 2012 up to 3.3 percent in 2014).

Figure 1.2: Recurrent Expenditure to GDP



Source: Government of Tuvalu, 2016 National Budget

However, Tuvalu presents a high level of risk of fiscal sustainability by depending on non-physical and volatile assets such as fishing licences fees, tv.domain, remittances, TTF distribution and ODA. The high dependency shows the absence of favourable conditions for economic diversification at national level. The Gross National Income (GNI) measuring the degree of dependency of the economy on foreign sector is actually 1.64 times higher than the GDP in Tuvalu[5]. This situation is even more worrying because of the still high external debt level. Though the external debt decreased from 44 percent of GDP in 2010 to 35 percent in 2014 which shows the positive impact of the reforms undertaken by the Government, it remains high given the limited capacity of the country in increasing

[5] Government of Tuvalu, Te Kakeega III, 2016

fiscal space as mentioned in the Tuvalu Trust Fund Advisory Committee (TTFAC) in November 2015: "[…] *despite government's recent good fortune with soaring revenues, a strong balance sheet with significant reserves, and a very good recent record on public sector reforms, the overall picture of fiscal prospects is of volatile revenues and increased spending pressures that will be very difficult to restrain*…[6] In addition, the gradual implementation of zero tariffs under the PICTA agreement starting in 2017 will reduce tax revenue on imports coming from the PICs that have minimum 40 percent local content.

This situation would call for long-term planning and foresight. The reduction in remittances due to the 2008 financial crisis and the current renegotiation of the US Treaty with the FFA show the risks associated with dependence on a few sources of financial flows.

C.2. Fishing revenue

Over the recent years, the Government of Tuvalu has reformed the fishing regulatory framework to improve the management of the fisheries sector in its Exclusive Economic Zones (EEZs) in order to enhance the conservation and preservation of the marine resources in a sustainable way but also to ensure that the country fully benefits from the fishing through job creation and economic growth.

The Government of Tuvalu enacted the Tuvalu's Marine Resources Act in 2006 so as "to ensure the long-term conservation and sustainable use of the living marine resources for the benefit of the people of Tuvalu" and developed the Fisheries Investment Incentives Policy in 2011 aiming at promoting foreign investment to: i) reverse the negative current trends of offshore licensing revenue (from AU$18 Million in 2013 to AU$17 Million in 2014), ii) improve fishing management by positioning Funafuti lagoon as the major tuna landing and transshipment port in the Western and Central Pacific Ocean, iii) ensure employment of Tuvaluans in the fishing sector and iv) secure the fish and marine resources through conservation and preservation-based management. In addition, Tuvalu adopted a Tuna Management Development Plan (2015-2019). Last the restructuring of the Ministry of Fisheries illustrates the great importance of fishing for Tuvalu. The ministry comprises now 42 staff (before there were 32 staff) with new positions in the Oceanic Fisheries department. This reform was funded by New Zealand under the "Tuvalu Fisheries Support Program (TFSP)" (2014-2019).

Tuvalu along with the seven other nations under the Parties of the Nauru Agreement (PNA) established the Vessel Day Scheme (VDS) in 2010. The Vessel Day Scheme (VDS) is a scheme where vessel owners can purchase and trade days fishing at sea in places subject to the PNA[7].This is done in accordance with the regional quota (a number of days is allotted to each company based on the capacity of the fishing zone) defined by the Forum Fisheries Agency. The VDS has helped increase fishing revenue of the PIC and regulate the fishing activity on the fishing vessels in a sustainable way. Tuvalu revenue from the VDS for purse seine fleet account for AU$27 million while the long line fishing only represent about AU$300,000 in 2015.

Under this agreement, the PNA signed a bilateral treaty with the United States which allowed its US fleet to acquire 5,700 days at the price of AU$12,600 per day. The United States are the first country in terms of licensing fees for Tuvalu representing 9 percent of the total budget. But the announcement from the US National Marine Fisheries Service, the US fishing regulator, in January 2016 of their decision to give 1,935 days back to the FFA due to the sharp fall of skipjack tuna prices changed drastically the context in the Pacific fishing industry. Indeed the low prices of skipjack tuna would simply put the US fleet in an unprofitable situation given the VDS daily fishing rate. As a result, the FFA orders to the US fleet to stop fishing until the US pays the amount agreed of UD$17 Million at the

[6] TTFAC, 32nd Report of the Tuvalu Trust Fund Advisory Committee, November 2015
[7] www.ffa.int/vds

last FFA meeting in August 2015. The decision was therefore taken to sell the 700 days in a sub-regional pool to other countries who had earlier requested to acquire some days such as Taiwan while the US with the PNA would start discussing on a more flexible arrangement starting in 2017. Actually, a new structure treaty had already been under discussion to allow more bilateral relations within the treaty, yet the US decision is a major setback for the small PIC and particularly for Tuvalu. US pull out would imply 700 days less of revenue for Tuvalu, i.e. 9 percent of the Tuvaluan revenue. Even if new countries acquire the remaining days such as the recent fishing rights agreement signed with Taiwan, it is unlikely that the licensing fees remain at the price of AU$12,600 reducing the revenues from fishing licences. It is therefore expected to have negative impact on the national budget and its sustainability for the next few years.

Recommendation 3: Diversify as much as possible within the possibilities the economy to avoid adverse conditions from the over dependence on one sole sector, i.e. fishing. Include binding clauses in the fishing licences and enforce them to ensure employment of a minimum number of Tuvaluans on each fishing vessels.

In addition, the lack of monitoring of the catch limit for each individual fishing vessel has led to illegal fishing and behaviours damaging the marine resources in Tuvalu and in the Pacific region, in general. Though conditions have improved since the establishment of the VDS, illegal fishing and overfishing remain a major concern for the protection of the fishing industry and the economy. To this end, the FFA plans to increase the benchmark day price so as to protect the most predominant industry of the Pacific region. However, it would also increase the pressure of the fishing vessels to fish more in order to guarantee profitability. The need for fixing the appropriate price under the VDS as well as giving the means to monitor and supervise the quality and quantity of fishing in the Tuvaluan EEZs remain a challenge and should be tackled soon to allow sustainable fishing management and financial planning.

As said earlier, the 2016 budget was based on an optimistic assumption that fisheries revenue would increase up to AU$31.3 Million thanks to the revenue arising from the US Treaty. At the time of this present report, the situation is unclear about the future of the revenue from fisheries. To this end, Tuvalu will need to ensure a strong financial position and economic diversification so as to protect the country and meet the domestic needs. The Tuvalu Trust Fund (TTF) can provide this financial security as it was established to generate revenue and compensate for adverse shocks. The history of the Tuvalu Trust Fund is a reflection of the strategy of Tuvalu to prepare its future and finance its survival.

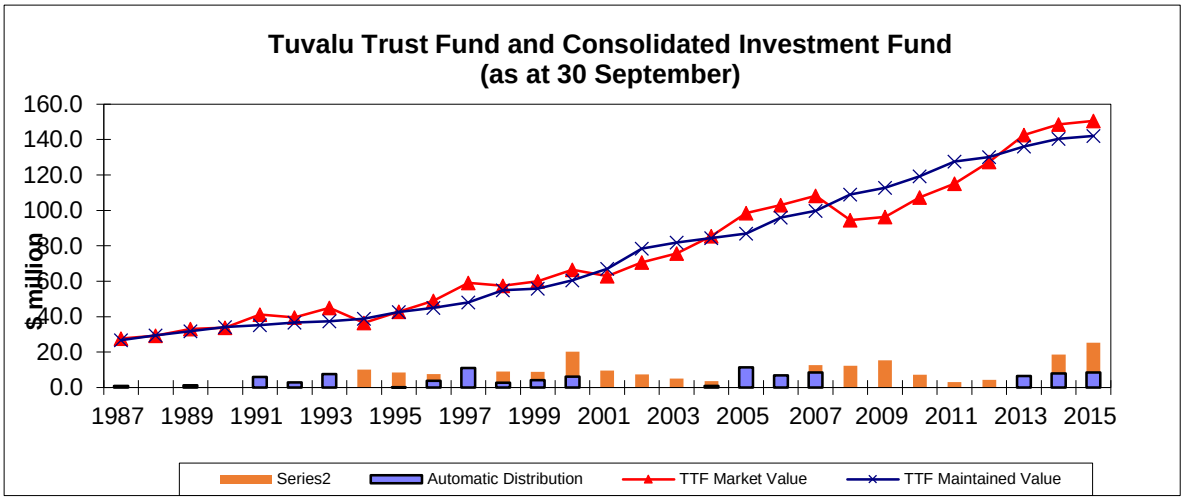
C.3. the Tuvalu Trust Fund (TTF)

Established in 1987, the Tuvalu Trust Fund is owned by Australia, New Zealand and Tuvalu. Tuvalu does not have a majority share. The TTF is a vehicle for development and a solution to over dependency on fishing and external assistance. The objective of a trust fund is to provide a source of sustainable revenue from the proceeds from investment of the Trust fund capital. The Tuvalu Trust Fund is considered as a great example of financial innovation which enables Tuvalu to help finance chronic budget deficits, underpins economic development and achieves greater financial autonomy. The TTF is a success story, unlike the Trust funds of the neighbouring countries (Kiribati, Palau, Nauru, Marshall Islands), relying upon a very precautious draw-down policy and the separation of the capital fund (TTF) from the fund used for managing the revenues generated by the TTF. Thus, the TTF redistribution occurs only when the market value exceeds the maintained value of the fund. Proceeds are then transferred to the Consolidated Investment Fund (CIF). A draw-down of 25 percent was actually adopted in the view of reaching AU$200 Million in 2020.

In 2015, the TTF generated AU$4.7 Million which were re-invested into the TTF with the objective of a maintained value of the TTF up to AU$200 Million by 2020. The CIF is thus financed by other sources, mainly by donors. The distribution of AU$4.7 Million represents about 25 percent of the total

expenditures of the national budget. The maintained value of the TTF at 30 September 2015 was AU$143.2 Million. The market value of the fund rose to AU$148 Million. During 2015, AU$3 Million was contributed to the Fund by the Government of Tuvalu and AU$31,000 by Turkey.

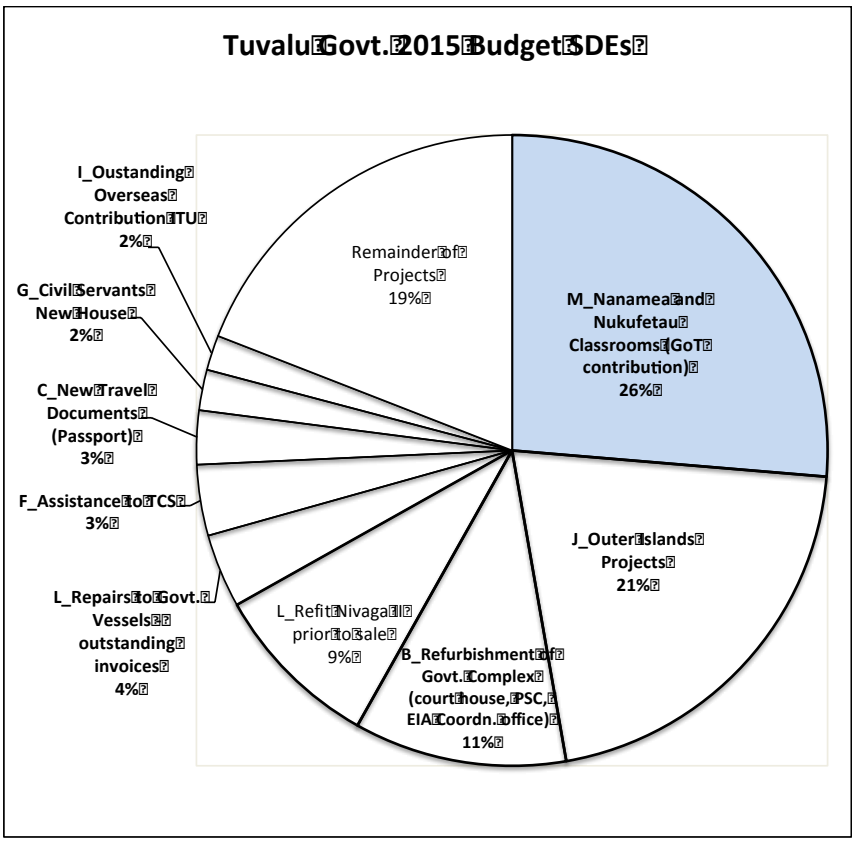
Figure 1.3: Historical Performance of TTF & CIF



Source: TTFAC, 31st Report of the Tuvalu Trust Fund Advisory Committee, April 2015

The TTF is a financial buffer since it does not directly contribute to development, it was set up to provide a stable financial revenue in order to finance recurrent expenditures highlighting the political decision of the Government of Tuvalu to ensure a prudent fiscal and budget policy. Nevertheless there is a funding gap for long-term investments and development projects which is not covered by the TTF, hence the setting up of the Special Development Expenditures aimed at financing one off projects such as infrastructure and development projects. However, the targeting of projects funded by the SDEs is not always based on economic and social parameters as it largely covers the current expenditures compared to development projects and investment into productive sectors. Below is the distribution of the SDEs in 2015 which shows inadequacy between the purpose of the SDEs and the effective allocation of funding.

Figure 1.4: 2015 Budget SDE Spending by Activities



Source: TTFAC, 31st Report of the Tuvalu Trust Fund Advisory Committee, April 2015

The allocation of SDE funding should be made in a more development-friendly manner so as to guarantee that essential needs of the population are covered and ensure unexpected shocks such as the TC Pam. The SDE could finance projects with high return with the creation of business awards so as to encourage the private sector in investing in the country. While the TTF provides self-reliance to Tuvalu, there is a greater need to ensure that the appropriate decisions are being made regarding the CIF and the SDEs allocation in accordance with the macroeconomic environment and human development needs to ensure growth and prosperity for all Tuvaluans.

Some other funds are also in place in Tuvalu. In 1999, the Faulekaupule Trust Fund (FTF) was set up as a devolution programme to achieve the following objectives: (i) to assist the acquisition and development of skills and self-reliance in the communities through local training; (ii) to enable the communities to acquire, maintain, and improve community assets and resources in order to further education and self-reliance; (iii) to fund community projects that improve the living conditions of the communities; and (iv) to increase the ability to generate revenue within the community for the good of the community[8]. The FTF is managed by the Representatives of the local councils (Faulekaupule) and the Government of Tuvalu. The FTF is financed by the contributions of the outer islands which are matched by the Government of Tuvalu. As of September 2013, the net assets value was AU$29.7 Million. Though the FTF would be the best tool for local development and trade initiatives at community level, the results have been very weak in achieving these objectives in the outer islands. Selection of projects funded by the FTF are not based on rational basis and the absence of regular supervision and monitoring are the main reasons for the poor performances of the fund. As the TK III defines the outer islands development as a priority, increasing capacity in the identification of sustainable projects in the outer islands and monitoring and supervision are critical at that time and should be supported in the short and medium-term.

[8] Faulekaupule Trust Fund Deed, 1999

The new fund established by Tuvalu is the Tuvalu Survival Fund (TFS), based on the Tuvalu Survival Fun Act (2015). The TFS was created by the Government of Tuvalu to "finance recovery and rehabilitation from climate change impacts and disasters, and climate change investments in mitigation and adaptation projects"[9]. This came after the damages caused by the TC pam which severely hit Tuvalu in March 2015. The fund is financed by the General Budget and donors contribution. As a beginning, AU$5 Million were pledged by the Government of Tuvalu for immediate response.

Recommendation 4: Better target and plan development projects with high impact on the population should be prioritized for the SDE, FTF and the Survival Fund. The Tuvalu Survival Fund may benefit from large funding projects, arising from the signing of the Paris Agreement and other development partners' assistance, which will require strong planning, management and Monitoring and Evaluation system.

C.4. Human indicators

Tuvalu is a small country of the Pacific Ocean composed of nine islands over an area of 911,000 sq. km. The land territory of Tuvalu is 26 sq. km. The population of Tuvalu is 10,823 of whom half of it lives on the main Island of Funafuti. The country faces an overpopulation on the main island while the other half is spread over the other islands. The geographic situation of the country is crucial as it determines the livelihoods of the Tuvaluans but also the trade potential and constraints. Living on a tiny land territory confronted to climate change and violent cyclones affects the possibility of development of Tuvalu. The population is faced with limited choices in terms of natural resources. Crop agriculture is very limited to small areas and basic infrastructure is scarce. Tuvaluans live primarily on subsistence farming and fishing. While the country has taken strong political decisions in favour of human development and social services, the living conditions of the Tuvaluans remain basic. Poverty rates have increased from 16.5 percent in 2004-2005 to 26.3 percent in 2010. In 2012, the MDG 1 on "Alleviating Poverty and Hunger" (or SDG 1, 2 and 8) was off track and MDG 3 on "gender parity" (SDG 5), MDG 5 (SDG 3) on "universal access to reproductive health" with high teen fertility (42 birth rate per 1,000 females in 2005) and MDG 7 (SDG 6) on "access to safe drinking water and basic sanitation" show mixed results[10].

Figure 1. 5: MDG status in Tuvalu (2012)

[9] Government of Tuvalu, National Budget 2016
[10] PIFS, Pacific Regional MDGs tracking Report, 2012

MDG 1 Eliminate Extreme Poverty and Hunger	TARGET 1.A Halve, between 1990 and 2015, the proportion of people whose income is below the basic needs poverty line	Hardship increased. Depth of poverty fallen. Share of poorest quintile fallen.
	TARGET 1.B Achieve full and productive employment and decent work for all, including women and young people	Labour productivity down. Low employment levels. Vulnerable employment up.
	TARGET 1.C Halve, between 1990 and 2015, the proportion of people who suffer from hunger	Low prevalence of underweight children. Decline in food poverty.
MDG 2 Achieve Universal Primary Education	TARGET 2.A Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling	High net enrolment. Increase in survival rate. High literacy rate.
MDG 3 Promote Gender Equality and Empower Women	TARGET 3.A Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015	Gender parity achieved. Low participation in non-agricultural sector. Zero representation in parliament.
MDG 4 Reduce Child Mortality	TARGET 4.A Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate	Under-five mortality fallen significantly. Infant mortality declined steadily. Relatively high measles immunisation coverage.
MDG 5 Improve Maternal Health	TARGET 5.A Reduce by three-quarters, between 1990 and 2015, the maternal mortality rate	Low maternal deaths. High skilled attendance.
	TARGET 5.B Achieve, by 2015, universal access to reproductive health	Low contraceptive use. Teen fertility up slightly. High antenatal care. High unmet need for family planning.
MDG 6 Combat HIV/AIDS and Other Diseases	TARGET 6.A Have halted by 2015 and begun to reverse the spread of HIV/AIDS	No data on HIV prevalence; 11 cases so far. Low condom use. Good HIV/AIDS knowledge.
	TARGET 6.B Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it	100% access
	TARGET 6.C.I Have halted by 2015 and begun to reverse the spread of Malaria	No malaria in Tuvalu.
	TARGET 6.C.II Have halted by 2015 and begun to reverse the spread of Tuberculosis	TB under control. Treatment progress.
MDG 7 Ensure Environmental Sustainability	TARGET 7.A Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources	Low forest cover. No data on CO_2 emissions. Use of ozone-depleting substances up but marginal. No data on total resources used. Protected areas up.
	TARGET 7.B Reduce Biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss	
	TARGET 7.C Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation	High access but water quality issues. Improved sanitation access but outer island concerns.
	TARGET 7.D By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers	No data but some progress noted.

Source: PIFS, Pacific Regional MDGs tracking Report, 2012

The TK III stresses upon the need for prosperity and well-being for its population, particularly those living in the outer islands who suffer isolation and lack of transportation in a more acute way than in Funafuti Island. Health and education are also the priority sectors benefiting from massive investments. However, the social expenditures mainly target two schemes as seen before, the Tuvalu Medical

Treatment Scheme (TMTS) and scholarships for students living overseas. In 2015, remittance income accounted for 40 percent of household income in Tuvalu, second only to wages and salaries[11].

Yet, in addition of being very unsustainable financially, it also lacks the solid foundation to be efficient. Indeed, despite a health reform process and a Health Master Plan (2009-2019), basic care and capacity are lacking in Tuvalu. The non-communicable diseases are extremely widespread and adequate treatment in Tuvalu is merely impossible. In education sector, the lack of prioritization in funding the higher education levels is also affecting the capacity and skills of young students applying for overseas jobs or labour mobility schemes in New Zealand and Australia. Indeed, the recent years have seen a decrease in the number of Tuvaluans students benefiting from the seasonal and employment schemes partly because of the low level of education compared to the other Pacific nations. The country should invest in improving infrastructure and quality education in secondary and tertiary education to ensure that youth is given the right skills to study and work overseas. It would also help give incentives for the young Tuvaluans who are unemployed with no job opportunities in Tuvalu. Though there is a critical lack of data, unemployment remains quite high in Tuvalu so is the informal sector.

Without a clear strategy on public sector reform, private sector development and a better targeting of social expenditures, poverty rates will remain quite high mainly with prospects of climate change which will affect the potential of living of the Tuvaluans by reducing the size of agricultural land and damaging infrastructure with more frequent and violent cyclones.

Recommendation 5: Formulate pro-poor budgeting and planning in order to tackle poverty and unemployment.

C.5. Graduation

In the current context, the graduation of Tuvalu looks like an unlikely event, even more after the TC Pam in March 2015 which devastated the islands and affected about 40 percent of the population. The damages caused by the TC Pam were estimated at 33.6 percent of 2014 GDP[12] leaving the country in a greater vulnerability. The graduation is a mechanism upon which based on three criteria[13] a Least Developed Country can be graduated to the developing country category. Tuvalu met two criteria in 2012, i.e., the per capita Gross National Income (GNI) criterion and the Human Assets criterion. These results are partly due to the method of calculation used to measure revenue and poverty which tend to be overestimated. Indeed, by using the GNI which measures the flows of revenue going into the country instead of GDP which is based on the real productive capacities, the criterion is met, yet it shows also the high dependency on external resources, hence Tuvalu's vulnerability. Moreover, Tuvalu was far from fulfilling the third criterion which is the Economic Vulnerability Index (EVI) comprising social and environmental parameters. Tuvalu level on the EVI was only at 49.9 percent of the threshold. As noted in the UNCTAD Vulnerability Profile of Tuvalu in 2012, Tuvalu was of the "two most economically vulnerable countries" under the EVI. In the 2015 triennial review of the Committee for Development Policy (CDP), the ECOSOC decided to defer the consideration of the graduation of Tuvalu to its session of 2018 to allow the Council "to have an opportunity for further consideration of the particular challenges that Tuvalu faces"[14]. Being a Small PIC facing climate change on a daily basis with the absence of fresh water, the acidification of the soils, and the sea level rise, among others, the vulnerability level is extremely high. As seen above, the poverty level is also high due to the lack of economic and trade opportunities which are intrinsic to the isolation and remoteness of Tuvalu preventing any productive activities from being competitive. Though the income per capita thanks to

[11] Government of Tuvalu, Te Kakeega III, 2016
[12] World Bank, IDA Supplement Financing Document, Report No. 98793-TV, August 2015
[13] The three criteria for graduation of LDCs are as follows: per capita gross national income (GNI), human assets and economic vulnerability to external shocks (http://unohrlls.org/about-ldcs/criteria-for-ldcs/)
[14] United Nations, Report of the Committee for Development Policy on its seventeenth session, E/2015/L.13, 2015

the volatile sources of revenues, i.e. fishing licences and the TTF revenue, can be relatively high compared to some other PIC[15], it cannot be the decisive factor for a graduation which at the end will impoverish even further the Tuvaluans and increase the vulnerability of the country which still depends for half of its GDP on donors funding. The TKIII stated that "the Government of Tuvalu will resist graduation from LDC membership[16]".

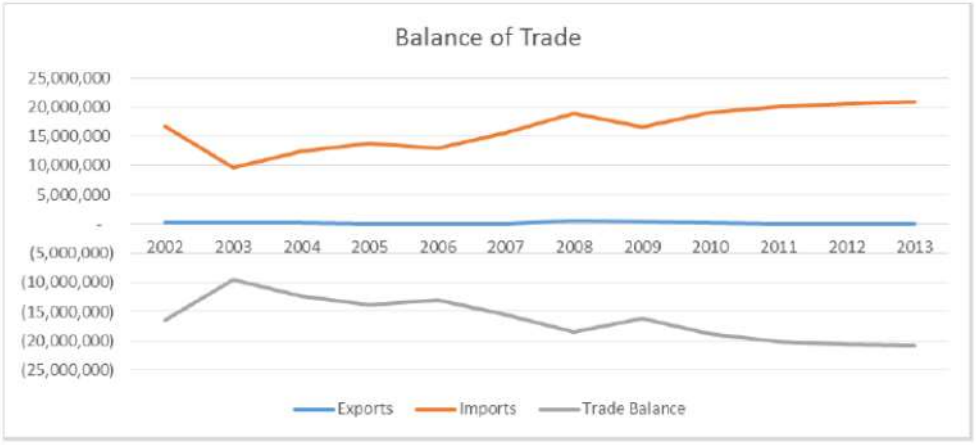
D. Trade Reforms and Trade Performances

D.1. Balance of payments and trade performances

Given its geographic remoteness and the inherent supply-side constraints, Tuvalu is a non-trading nation, hence has always been a net importer alike most of the small PIC. In 2013, Tuvaluan exports accounted for 1.3 percent of GDP while imports represented 43.3 percent mainly composed of basic needs such as food items, fuel, and infrastructure equipment and materials.

Food consumption needs are not met by local suppliers, hence the food imports volume represent a large share of the total imports. To this end, Tuvalu and Fiji signed a bilateral trade agreement to ensure food security by importing fruits and vegetables produced on the island of Rotuma as part of the Fiji territory. Rotuma is located half-way between Tuvalu and Fiji and can be an alternative to expensive food imports coming from far away countries. However, it is also important to highlight the work undertaken by the Taiwan cooperation in encouraging small farming in Funafuti supplying the local demand for local and non-local food crops. This initiative shows that at small scale potential for domestic trade is still a viable option in Tuvalu.

Figure 1. 6: Balance of Trade



Source: Government of Tuvalu, National Budget 2015.

The size of the domestic market, the difficult finance and market access and the lack of appropriate infrastructure in inter-island transport limit the potential for domestic trade. As the chapter 5 of the DTIS update shows, low volume with high added-value is the way forward for both domestic and international trade. By moving up the value chain and adding value domestically to some export products, Tuvalu could increase its trade position. Nevertheless, in the context of Tuvalu, value addition can only be limited give the constraints and the small size of the country, yet it can positively impact on employment and the economy. For instance, some traditional products from outer islands which have been abandoned in favour of imported food items can be produced again and consumed by local

[15] International Monetary Fund, Article IV Consultation Report, August 2014
[16] Government of Tuvalu, Te Kakeega III, 2016

population on a small scale while services such as tourism could provide a new source of revenue to the country.

In 2014, the main export markets were Japan (US$2.8 Million) and India (US$1.4 Million) while import markets were dominated by Singapore (US$46.8 Million), Fiji (US$38.6 Million) and Japan (US$33 Million)[17]. The share of Australia and New Zealand are decreasing sharply in the total trade flows of Tuvalu with respectively imports amounting to US$1.6 Million and US$6 Million. Indeed, while the two countries were the traditional trading partners, Asian countries are now emerging as main partners with an increasing trading interest for the Pacific region, including Tuvalu. This shows the growing intra-regional trade and market diversification with new trading partners opening opportunities and trade expansion.

Indeed, the way forward for Tuvalu trade strategy should focus on the existing fishing industry, the potential in the development of the deep sea minerals, some niche markets for traditional agricultural products such as coconut oil or toddy bread, and few services such as labour mobility -by sending Tuvaluans overseas working on container vessels- and, tourism. Financial crisis has critically affected the sector of seafarers. Though Tuvaluan seafarers have a very good reputation of being hard workers, the number of them employed on vessels fell drastically in 2012. As of early 2016, the number increased up to 158 seafarers working on 28 container vessels while in total Tuvaluans account for more than 800 seafarers. Seafarers are the main providers of remittances for Tuvaluan households. Therefore, there is a surplus of labour force which could be uses either domestically on fishing vessels or internationally in countries facing shortage of workforce. In addition to seafarers, Tuvaluans benefit from seasonal employment and education schemes which allow them to migrate and enhance their opportunities for long-term employment.

Tourism could also be a potential source of revenue for Tuvalu mainly as the Asian countries have started travelling in the Pacific and is expected to grow in the next few years. An IMF report stated that since 1995, China's travel departures had increased at an annual rate of 15.5 percent per year.[18] In addition, the branding of the "sinking island" can attract a tourism market in search for environmental and eco-tourism. Conditions would need to improve to ensure competitiveness, particularly in terms of affordability and accessibility in terms of transport, telecommunications and accommodation. Another benefit of tourism is to create backward linkages with other sectors of the local economy such as i) agriculture so as to supply the hotel industry with local products and ii) education by recruiting local workforce in tourism services, iii) infrastructure by improving inward and inter-island transportation services and ICT to fully harness tourism opportunities.

Recommendation 6: Focus on low volume but high end market for Tuvalu to meet the local supply-side capacity. Priority sectors should be enhanced through value addition before being exported. Create backward linkages to holistically develop trade sectors.

E. Market Access and regional integration

As a LDC, Tuvalu benefits from the preferential market access for goods exported to certain developed countries. However, Tuvalu has such a limited export base that this preferential treatment for market access has little or no impact on Tuvalu trade and its connection to value chain. Same applies to the European Union's "Everything but Arms" (EBA) initiative since Tuvalu does not export to European countries. A small export base and productive capacities of the PICs limit the advantage of the special treatments for market access. Indeed, it is a fact that the small size and supply side constraints of Tuvalu

[17] ADB, Key Indicators for Asia and the Pacific, 2015

[18] IMF, Pacific Island Countries: In Search of a Trade Strategy, Working Paper prepared by Hong Chen, Lanieta Rauqeuqe, Shiu Raj Singh, Yiqun Wu, and Yongzheng Yang (WP/14/158), August 2014

prevent it from taking advantage of trade liberalisation on the export side despite a high trade openness primarily to facilitate the entry of imported products. As shown in the IMF Report, "trade openness of the group of small PICs is on average at more than 120 percent of GDP in goods and services trade".[19] As a result, Tuvalu's integration into a global value chain will always remain a challenge. The remaining options to increase competitiveness and reduce dependency on imports is thus, on one hand, to stimulate domestic private sector and, on the other hand, tap into the Pacific regional market offering economies of scale and boosting trade opportunities.

The regional integration process is quite recent in the Pacific region. This late move can be seen as peculiar given the remoteness and smallness of the PICs which could have been the drivers for a regional approach much earlier. Yet the fact that most of the Pacific countries export the same products limits the possibility of intra-regional trade. However by grouping their needs and establishing some common infrastructure such as in transport industry they can contribute to lower their geographic constraints. In this respect, the most remarkable initiative at regional level is the Framework for Pacific Regionalism, endorsed in July 2014 by the Pacific Islands Nations. The principle is that regionalism can form a platform for the Pacific nations in addressing common challenges as well as tapping into opportunities which could benefit all the PIC. The objectives are as follows: i) Sustainable development that combines economic social, and cultural development in ways that improve livelihoods and well-being and use the environment sustainably; ii) Economic growth that is inclusive and equitable; iii) Strengthened governance, legal, financial, and administrative systems; and iv) Security that ensures stable and safe human, environmental and political conditions for all. The Framework is a positive step towards a regional approach whereby the Pacific countries can take ownership and forge unity on issues that have been identified as priorities by the Members of the Pacific Islands Forum. These priorities are: i) fisheries: to ensure sustainable economic returns on fisheries and assess the current monitoring, control and surveillance (MCS) arrangements in the Pacific; ii) climate change, with a recognition of the special status of the SIDS in the Paris Agreement, among others climate change related issues; iii) development of information and communications technology (ICT); iv) fight against cervical cancer; and v) protection of human rights in West Papua. In addition, the Pacific Islands Forum supports regional integration by facilitating the negotiations and implementation of the existing trade agreements (PICTA, PACER +, Regional Trade Facilitation Programme, etc.) while ensuring that the economic interests of its members are protected. Thus, thanks to this Framework, Tuvalu can benefit from support from larger Pacific countries and get access to assistance from development partners on a regional scale on issues which are not only affecting the archipelago but all the PICs.

Recommendation 7: Make the greater use of regional integration and the Framework of the Pacific Regionalism to advance regional agenda on common issues mainly as regard climate change and fisheries management through the VDS with a special focus on the employment of Tuvaluan seafarers on fishing vessels and ensure that regulations in favour of domestic employment is enforced.

E.1. Regional Trade Agreements: SPARTECA, PICTA and PACER Plus

Tuvalu is also member of several regional trade agreements. Regional trade agreements are aimed at creating a regional single market with the progressive elimination of tariffs and duties. The Pacific Island Countries Trade Agreement (PICTA) and the PACER Plus are the trade agreements with the biggest implications for market access. In the case of Tuvalu, the only benefit of regional trade agreements is on the import duties and tariffs being a net importer country.

The PICTA, signed in 2003, is a regional agreement among the Pacific Island Countries. This agreement reflects the will of the PICs to form a Pacific single market and free trade area based on reciprocity. The PICTA includes trade in goods, trade in services and temporary movement of persons. The

[19] Ibid

negotiations resulted in signing the Agreement on Trade in Goods (2008), the Protocol on Trade in Services (2014) and the Temporary Movement of Natural Persons (TMNP). Under PICTA, goods imported from the PICs that have minimum 40 percent local content will have zero tariffs by 2021. Tuvalu has few products to be included under the PICTA agreement, yet it is expected that losses will arise from the application of the trade regime. Tuvalu tax revenue on imports coming from the PICs should diminish since tariffs will start reducing gradually down to zero by 2017. The only real advantage for Tuvalu is under the TMNP Agreement which allows to send labour force to any PIC which faces skills and labour shortage in a specific sector. This could offer Tuvalu with the opportunity to use its unemployed labour force such as in the case of Cook Islands in need for workers in hospitality and care giving sectors.

Tuvalu could also have non-reciprocal access to regional markets as part of the South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA) signed in 1981 by the PICs, Australia and New Zealand. The SPARTECA allows duty free and quota free for products exported to Australia and New Zealand if only the goods "have at least 50 percent of their value added in the PIC themselves in order to qualify for DFQF access"[20]. However, without any manufacturing capacity, Tuvalu has never been able to really benefit from the SPARTECA[21]. This challenges Tuvalu to be outward looking in terms of enhancing national productive capacities, so as to benefit from PACER-plus which might supersede the SPARTECA, once it enters into force.

Having negotiations launched in 2009, and closer to conclusion at the time of writing, the PACER-Plus is a bigger comprehensive trade scheme for Tuvalu as it includes bigger Pacific trading economics. That is: Fiji, Australia and New Zealand. PACER Plus is a free-trade arrangement between Australia, New Zealand and the Forum Island Country (PIC) and will eventually subsume the SPARTECA, for PACER-Plus signatory parties. The negotiations on the both market access and legal text of the PACER-Plus are still underway and their conclusion is expected by June 2016. However, Tuvalu should not expect major changes in its trading relations with Australia and New Zealand since the share of trade volumes between Tuvalu and these two countries is quite small. Yet, a slight increase in development assistance, particularly capacity building programmes and technical studies, is foreseen under this scheme.

E.2. The Economic Partnership Agreement (EPA) – European Union

In the ambits of the article 36 of the Cotonou Partnership Agreement, Tuvalu, together with the 14 Pacific ACP States, has been in negotiation with the European Union on the Economic Partnership Agreement (EPA).The non-reciprocal EPA was triggered by WTO members' call for non-discriminatory EU trade relations with the ACP states. Hence, EPA negotiations were launched in 2004 and expected to be concluded at the earliest, on a WTO waiver. However critical issues on fisheries management emerged and only Papua New Guinea and Fiji signed the interim EPA in 2009, to safeguard their trade with the EU pending the conclusion of a comprehensive EPA involving all Pacific ACP States. As said in the TPF, the Pacific ACP States (PACPS) are willing to ensure preferential access to the EU market in order to increase their fisheries exports but criticism expressed by the EU on the fishery conservation and management led the negotiations to a standstill. Moreover, the decision to put Tuvalu on formal notice for not taking sufficient measures in the international fight against illegal, unreported and unregulated fishing has also increased concerns and mistrust. Since then, efforts (with little success) have been being ongoing to resume negotiations and improve the fisheries management system with the support of the EU.

[20] Government of Tuvalu, Trade Policy Framework, 2016

[21] Lack of trade data makes it difficult to track Tuvalu trade flows over the last decades.

Recommendation 8: Trade relations of Tuvalu with the EU being minimum and already benefiting from the GSP and EBA treatment, Tuvalu may not have to sign any additional agreement which may not serve its economic and trade interests in the short and medium term. However, the positive conclusion of the negotiations on fisheries management would improve the sector and the profile of Tuvalu fisheries at regional level in terms of regulations, compliance and safety issues.

E.3. The World Trade Organization

Discussions were initiated about the opportunity for Tuvalu to become a member of the World Trade Organization (WTO) when Tuvalu joined the EIF. The example of Vanuatu in that regard gives a lesson about the time and energy spent by the Government of Vanuatu for limited results. Small islands such as Tuvalu should focus their capacity in developing their trade and institutional framework since the impact of such multilateral commitments is expected to be extremely limited. However, Tuvalu can learn and build from the current trade negotiations and ensure that the country complies as much as possible with any agreement aimed at facilitating trade as it is the case with the recent Trade Facilitation Agreement adopted at the WTO Ministerial Conference in Bali in December 2013.

Recommendation 9: Implement the Trade Facilitation Agreement as it will help improve trade procedures and operations, this without necessarily becoming a WTO member.

As a conclusion, Tuvalu has signed several regional trade agreements though Tuvalu shares in these agreements remains very limited. However, these trade agreements allow a better integration of the country into the regional and global value chain and ensure close cooperation among the PICs and the regional organizations. Some of these trade agreements such as PACER+ come up with development assistance which will benefit Tuvalu to the same extent of Tuvalu contribution to regional trade. Indeed, Tuvalu will remain highly dependent on development assistance from bilateral donors and multilateral organizations. In that regard, the Enhanced Integrated Framework should continue its support to Tuvalu in the context of the Pacific Aid for Trade.

F. Conclusion, the way forward and recommendations

Tuvalu has benefited these recent years of very positive macroeconomic conditions which helped improve its financial and fiscal position. The reforms on public finance have contributed to ensure budget sustainability and efficiency. The Tuvalu Trust Fund with increasing revenues gives Tuvalu the fiscal buffer required to offset external shocks. Nevertheless, Tuvalu remains fragile largely by its inherent nature and its dependency to volatile sources of revenues (fishing, tv.domain, and development assistance).

Therefore, a shift in the trade strategy towards domestic trade development with a focus on value addition in market niches such as organic agriculture and eco-tourism. This strategy will allow to ground economic growth on a more solid foundation. However, this requires a favourable environment for private sector and investment as well as a better response from education sector including vocational skills trainings to the new trade opportunities identified in the four trade priority sectors that Tuvalu has decided to engage in.

Last, regional integration is a solution to the isolation and remoteness of Tuvalu and regional initiatives should always be encouraged as it can help Tuvalu fight against common trade barriers but also environmental challenges faced by every PIC.

Recommendations listed below are taken from the chapter and are included in the Action Matrix of the DTIS 2016 for implementation:

Recommendation 1: Ensure capacity and ownership within the Department of Trade in front of the trade development agenda of Tuvalu for the next few years.

Recommendation 2: Beyond the human aspect of social protection and education support, audit the social schemes for better financial sustainability and efficiency with scenarios of in-country alternative solutions.

Recommendation 3: Diversify as much as possible within the possibilities the economy to avoid adverse conditions from the over dependence on one sole sector, i.e. fishing. Include binding clauses in the fishing licences and enforce them to ensure employment of a minimum number of Tuvaluans on each fishing vessels.

Recommendation 4: Better target and plan development projects with high impact on the population should be prioritized for the SDE, FTF and the Survival Fund. The Tuvalu Survival Fund may benefit from large funding projects, arising from the signing of the Paris Agreement and other development partners' assistance, which will require strong planning, management and Monitoring and Evaluation system.

Recommendation 5: Formulate pro-poor budgeting and planning in order to tackle poverty and unemployment.

Recommendation 6: Focus on low volume but high end market for Tuvalu to meet the local supply-side capacity. Priority sectors should be enhanced through value addition before being exported. Create backward linkages to holistically develop trade sectors.

Recommendation 7: Make the greater use of regional integration and the Framework of the Pacific Regionalism to advance regional agenda on common issues mainly as regard climate change and fisheries management through the VDS with a special focus on the employment of Tuvaluan seafarers on fishing vessels and ensure that regulations in favour of domestic employment is enforced.

Recommendation 8: Trade relations of Tuvalu with the EU being negligible and already benefiting from the GSP and EBA treatment, Tuvalu may not have to sign any additional agreement which may not serve its economic and trade interests in the short and medium term. However, the positive conclusion of the negotiations on fisheries management would improve the sector and the profile of Tuvalu fisheries at regional level in terms of regulations, compliance and safety issues.

Recommendation 9: Implement the Trade Facilitation Agreement as it will help improve trade procedures and operations, this without necessarily becoming a WTO member.

Chapter 2: Business Climate, Investment and Private Sector Development

A. Background

Tuvalu as a Smaller Island State (SIS) and a Least Developed Country (LDC) with one of the smallest land areas and population sizes in the world faces a number of constraints when it comes to private sector development. This chapter aims to identify key impediments to private sector growth in Tuvalu and proposes policy recommendations that are intended to lay the groundwork to raise local participation in private sector activities, increase the overall number of private sector business operating in Tuvalu, encourage greater levels of investment, open up opportunities for value addition for niche agricultural and fisheries commodities, as well as highlight issues and propose reforms to the legal and institutional frameworks which inhibit private sector growth in Tuvalu.

B. Policy Coherence

The *Te Kakeega III (TK III),* which is the latest version of Tuvalu's National Development Strategy, outlines the importance of private sector development and employment creation as a key priority. It articulates a vision that the private sector will be "the engine of growth and development providing commercially sustainable service" in Tuvalu. TK III further emphasises that the government is determined to develop the private sector within TK III's first five years of implementation by increasing financial support and access to credit for the private sector and building the capacity of local entrepreneurs to run their businesses on a commercial basis. The development framework for the next five years of TK III will look at:

- Conducting a supply and demand assessment on a selection of tradable products;
- Improving the data collection for the trade database;
- Improving biosecurity and quarantine measures;
- Improving local capacity in food processing; and
- Developing ecotourism products.

The Tuvalu National Trade Policy Framework (TPF) also has a strong focus on improving the business environment and strengthening the competitiveness of the Tuvaluan economy. The long-term vision of the TPF states that "trade is a valuable tool for the achievement of Tuvalu's overall sustainable development goals and objectives." It also alludes to the importance of the private sector as a key partner in the process for achieving this vision by highlighting that a range of policy decisions and actions, especially through mainstreaming trade into the country's overall development process will be necessary to take full advantage of the trade opportunities available to Tuvalu, while minimising the costs as much as possible. The TPF also aims to promote a close working relationship and collaboration both between government and the private sector to support the implementation of the trade policy.

C. Situational Analysis & Implementation of 2010 Tuvalu DTIS Recommendations

C.1. Public and Private Sector Relationship

Based on discussions with the private sector stakeholders and representatives from various government departments, it was apparent that there is a general distrust between government and the private sector in Tuvalu and the lack of awareness of formal avenues available to appropriately raise and address concerns from the private sector, contributes to an adversarial rather than collaborative relationship that should normally exist.

The Tuvalu National Private Sector Organisation (TNPSO), which is the main representative national private sector organisation in Tuvalu, acknowledges that significant work needs to be done to improve the relationship between the government and private sector in Tuvalu. A key issue affecting this relationship is the limited number of local Tuvaluans who run businesses. A vast majority of the larger

businesses in Tuvalu i.e. supermarkets, fuel depots, hardware retailers etc. are owned by foreign nationals and there is a perception amongst local Tuvaluans that prices of products are generally expensive and some businesses are unscrupulous in their business practices.

The DTIS and the TPF have institutional mechanisms for involving all key government agencies and the private sector to communicate and engage with each other and provides a formal platform, through the National Trade Steering Committee (NTSC) for identifying and addressing key trade-related constraints. The government should engage in more awareness building on the key provisions of the TPF and its linkages with the TK III, as well as the latest update of the DTIS, to ensure that communication and coordination issues with the private sector are immediately rectified.

C.2. Enabling Environment for Doing Business

Due to Tuvalu's remoteness and smallness, the cost of doing business is generally very high when compared to other Pacific Island Countries. There is no fresh water source on Funafuti and rainwater has to be collected for both residential and commercial use. During periods of low or no rainfall water has to be purchased from the desalination plant which is relatively expensive.

In terms of electricity, the main provider is the Tuvalu Electricity Corporation. While the cost per unit of electricity is comparable to some of the other Pacific Island Countries, it is still approximately 50 percent higher than what businesses pay in countries such as Fiji and Nauru.

For a vast majority of businesses that were interviewed as part of the field mission, connectivity in terms of ICT and transportation are pressing areas where the private sector continues to encounter significant challenges. The cost of internet services in Tuvalu is prohibitive, as it is the case in most other Pacific Island Countries with the exception of those countries that have liberalised their telecommunications sector such as Fiji, Samoa, Vanuatu and Papua New Guinea. To illustrate this point, it costs approximately AUD 750/month to access 25GB of data in Tuvalu when compared to AUD 35/month for 50GB of data in Fiji, which is significantly less as Fiji has access to the Southern Cross Cable Network (SCCN) which is a fibre-optic submarine cable that connects Fiji, New Zealand and Australia with the mainland U.S. Tuvalu's internet gateway is through a satellite based connection which is generally more expensive and of lower quality than through fibre-optic submarine cables.

As an immediate measure, the government should be urged to carry out reforms of the telecommunications sector in Tuvalu to improve the quality of internet services and reduce costs to make it more accessible. Other countries in the region, such as Vanuatu, Samoa and Tonga have connected to the SCCN via Fiji through ADB and World Bank financed projects and have seen significant reductions in the cost of internet services and improved quality and reliability. As a long-term objective, Tuvalu could also give consideration to the same in the future in order to improve internet services. However, in order to benefit from improvements in infrastructure the necessary regulatory reforms and enabling policy environment, through liberalisation, must be in place to ensure the welfare benefits flow down to the average consumer rather than being absorbed as operational costs in a monopolistic context.

Transportation costs to and from major trading partners is also quite restrictive as further considered in the Chapter 3 of this Report. On average it is three to five times more expensive to import goods into Tuvalu from key markets in New Zealand, Australia and China when compared to Fiji. While it is not surprising that trade costs are much higher in Tuvalu due to its distance from markets and relatively small market size, the substantial cost differential can also be attributed to the fact that Tuvalu does not have significant exports which increases the average cost for shipping companies to service Tuvalu as ships generally do no collect much cargo from Funafuti.

A summary of key costs for doing business in Tuvalu when compared to some other Pacific Island countries is provided below:

Table 2.1: Cost per unit of electricity

	Cost in local currency	Cost in AUD
Tuvalu	Fixed at 56 cents per unit New connection cost AUD 80	$0.56
Solomon Islands	SBD 6.93	$1.05
Fiji	FJD 0.42	$0.25
Tonga	TOP 94.05	$0.56
Cook Islands	NZD 0.81	$0.70
Kiribati	AUD 0.55	$0.55
RMI	USD 0.58	$0.65
Niue	NZD 0.50 to 0.70	$0.44 to 0.61
Nauru	AUD 0.25	$0.25

Source: 2014 PIPSO Doing Business in Tuvalu Report

Table 2. 2: Cost of Internet and Telecommunications

	Cost in local currency	Cost in AUD
Tuvalu Landline Mobile Internet	Set up costs: - Telecom provides phone Call charges locally - landline Minimum cost of mobile Cost of simcard Minimum recharge card Business & Corporate Institutions	$50 installation $50 for telephone $50 installation 10 cents per minute $40 $20 $10 $300/mth 8GB $500/mth 15GB $750/mth 25GB
Kiribati	Monthly rental fee Local calls Calls to mobile phones Mobile to mobile	$17 cents/ 5 mins cents/4 mins cents/per min
Palau	128kbps – US$350/month 192kbps – US$520/month 256kbps – US$650/month 320kbps – US$750/month	$390 $580 $724 $835
Cook Islands	Monthly – NZ$99 for 3.5GB	$86 for 3.5GB
Fiji	Internet – 50GB ADSL Mobile	$35/month $0.25/minute

Sources: 2014 PIPSO Doing Business in Tuvalu Report & Vodafone Fiji

While the market size and economic dynamics between Tuvalu and the other Pacific Island Countries are quite different, the above costs are presented for comparison purposes and provides an indication on the difficulties that is being faced by the government in attracting foreign investment and developing the private sector in Tuvalu from a cost of doing business perspective.

D. Access to Finance

In terms of other factors affecting the business environment, it was noted during the consultations that the financial sector in Tuvalu is not well positioned to fully cater for the needs of the private sector through business lending. There are three financial institutions in Tuvalu i.e. the National Bank of Tuvalu (NBT), the Development Bank of Tuvalu (DBT) and the Tuvalu National Provident Fund (TNPF). The NBT and DBT are fully owned by the government and operate as State-Owned Enterprises (SOEs). Ideally, the DBT should be playing a leading role in terms of facilitating lending to prospective

entrepreneurs, however, DBT has not effectively fulfilled this role and the bank is struggling to sustain its operations.

D.1. Development Bank of Tuvalu (DBT)

DBT was established in the early 1990s and provides business loans for the following activities:

- Agriculture and livestock;
- Fishing and marine based activities;
- Transportation (e.g. scooters);
- Housing;
- Tourism;
- Commerce (e.g. retail operations).

Access to affordable finance, particularly for outer island rural communities remains a considerable challenge. The main form of collateral taken by the two major banks in Tuvalu is a guarantee against members' funds held at the Tuvalu National Provident Fund (TNPF). A borrower can borrow up to 40 percent of the value of funds they have at the TNPF. Other traditional forms of collateral such as land and houses are not used by the banks due to the complex land tenure system. Land cannot be bought or sold in Funafuti, as land is under customary ownership, and houses built on leased land can only be resold to members of the respective landowning unit, which creates considerable uncertainty and challenges. The government will be urged to explore the possibility of securing technical and financial assistance to examine the feasibility of establishing a credit loan guarantee scheme which could address some of the issues concerning collateral and access to finance for small businesses.

The average interest rates charged by DBT have ranged between 9-15 percent over the past few years which is relatively high when compared to other Pacific Island countries. DBT currently charges 9 percent interest rate for business loans and aims to reduce this further to between 5-6 percent in order to attract more businesses. The DBT has not received a government grant since 2013 which used to amount to AUD 750,000 annually. The current portfolio of business loans held by DBT amounts to AUD 800,000, with deposits of AUD 1 million and bad loans of AUD 5 million.

The significant portfolio of bad loans compounded by uncertainty of the government grant that was previously provided to DBT has led to significant financial hardships for the institution to the extent that DBT has been compelled to encroach on the areas previously serviced by the National Bank of Tuvalu. This includes providing personal loans and taking term deposits which has led to competition between the two SOEs that is counter-productive to the interest of government and future sustainability of the DBT in particular.

The government needs to intervene in the near future to provide clarity on the objectives and functions of the two banks in order to avoid a situation where DBT would be at risk of collapsing. The sustainability of DBT is a serious concern that will have an overall impact on private sector development in Tuvalu and the government is encouraged to make a political commitment to support the operations of DBT by ensuring grant funding is provided on a consistent basis to enable DBT to become self-sufficient in the medium to long-term. Development partners and multilateral agencies should also be approached for technical and financial assistance.

The internal governance structure of DBT, capacity building of staff to undertake credit risk analysis and the debt recovery function of the bank needs to be urgently strengthened to reduce the amount of bad loans and to ensure future loans are provided to creditworthy customers. Furthermore, there is also an urgent need to put in place proper business training courses for interested entrepreneurs as a precondition for securing loans from the banks. While the University of South Pacific (USP) offers formal qualifications there is scope for DBT to partner with civil society organisations such as the National Council of Women and the Tuvalu Association of NGOs which already provide some training

in this area and have been successful in training women to start sewing and handicraft businesses on a small scale.

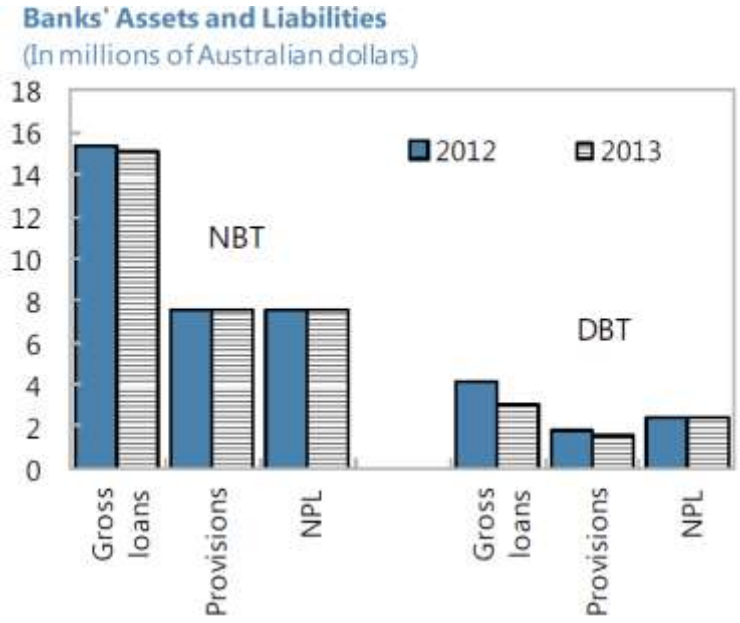
D.2. National Bank of Tuvalu (NBT)

NBT was established to provide commercial banking services in Tuvalu. It currently has a portfolio of 5,000 clients, AUD 30 million in deposits, AUD 14 million in loans and AUD 4 million in overdue loan repayments. It provides primarily personal loans, however, in recent times it has decided to strengthen its capacity in business lending noting the additional services being provided by DBT. It charges 9.5 percent interest rate for business and personal loans and similar to DBT uses clients' funds at the TNPF as its primary source of collateral.

There were a number of key observations made by NBT in the area of access to finance and the general performance of the Tuvaluan economy. NBT is the only provider of international banking services in Tuvalu and noted that remittances in recent years had dropped from a high of AUD 4 million in 2008 to approximately AUD 1 million in 2015. This indicates a growing dependence on local borrowing by prospective entrepreneurs rather than remittances from family members based abroad.

Key challenges highlighted by NBT included increased cost of compliance with international anti-money laundering obligations and establishing electronic banking facilities in Tuvalu i.e. ATM, EFTPOS and credit cards. NBT advised that a cost-benefit analysis had been done and it was determined that it would not be commercially viable to establish the above facilities in Tuvalu noting the significant capital costs and no feasible means to recover costs. An alternative solution involving a partnership with the Westpac Banking Corporation based in Fiji has been established where Tuvaluans can gain access to a Fiji Dollar international debit card to facilitate international transactions. Other services such as international telegraphic transfers are available at competitive rates. The NBT needs to apply and submit to the ADB guarantee fund for trade finance for private sector financing.

Figure 2.1: NBT Assets and Liabilities (in millions of Australian dollars), 2012-2013



Source: August 2014 IMF Article IV Consultation Report

E. Land

As is the case with most Pacific Island Countries, access to land and property rights remains a major obstacle towards creating a predictable and stable business environment in Tuvalu that makes it easier for investors to secure land which is an essential requirement for carrying out any business activity.

This task is made more difficult due to the small land area and customary ownership of land which creates challenges for land tenure. The current arrangements available to investors for accessing land include outright leasing of the land for a specific period of time, or using a parcel of land as part of a joint venture arrangement between the landowner and the investor concerned. However, negotiating lease arrangements can be challenging and onerous.

Most of the land on Funafuti is customary land with very limited land available to government. Based on advice from local stakeholders, the government leases for land in Funafuti will be up for renewal in the coming years which is an issue that needs to be urgently addressed by government in order to maintain business confidence. The government should also consider the possibility of establishing a land bank to enable interested landowners to deposit their land in the land bank allowing government to offer the concerned land to prospective investors at market rates. This would ensure information is readily available to investors and make the process of setting up a business easier.

F. Labour Force

The public sector plays a leading role in Tuvalu's economy. Public sector employment accounts for about 66 percent of all employment in the formal labour market while public sector expenditure accounted for almost 70 percent of Tuvalu's GDP in 2012. Increased productivity and up-skilling of the labour force and enhanced commercial competitiveness through the introduction of new technologies should be the key focus of government.

The previous Te Kakeega II recognised as a structural weakness in the economy the high levels of under-employment as a result of the growing labour force. It set out a number of strategies to address employment issues, including:

- consulting with the private sector so that labour market needs are better met;
- providing more information on the labour market;
- formulating and implementing a Human Resources Development Policy and Institutional Framework; and
- Investigating new offshore employment opportunities.

Improving education will be a key factor in enabling Tuvaluans to take advantage of labour opportunities in future and ensuring a skilled labour force is available within Tuvalu to support private sector development initiatives.

G. Tuvalu National Private Sector Organisation (TNPSO)

TNPSO is recognised as the main representative of the private sector in Tuvalu. They are quite active in the area of promoting private sector development and encouraging entrepreneurship amongst local Tuvaluans. The TNPSO is currently working securing funding for a large-scale project to establish a business incubator in Funafuti that will provide training and capacity building services in the areas of production, marketing, branding and packaging. Key products that are being looked at as part of the pilot project include breadfruit, *ponuponu* perfume and red toddy.

TNPSO is also proactive in providing assistance to the tourism industry. It is estimated that nine guesthouses exist in the various islets around Funafuti while the Marine Conservation Area remains a key attraction for visitors and a vital source of revenue for the town council or *kaupule*. However, on the main island of Funafuti, access to suitable land for tourism and other projects is difficult to secure.

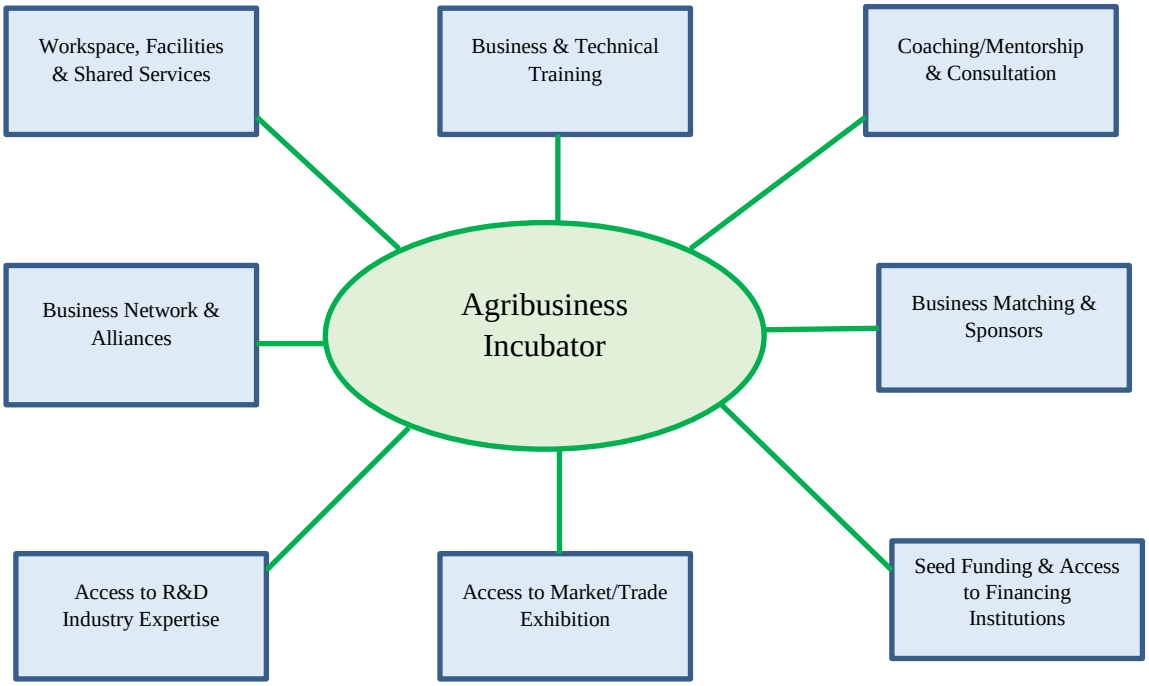
TNPSO agreed that considerable work needs to be done in Tuvalu in the area of business skills and financial literacy to ensure prospective entrepreneurs understand business concepts and are able to develop business plans and secure access to credit with viable business proposals.

Assessment of the TNPSO Business Incubator Project Proposal

As outlined above, the TNPSO is keen on establishing a business incubator on Funafuti with a focus on the agro-processing industry. According to the project proposal provided by the TNPSO, the business

incubator hopes to create and enabling environment where local producers and businesses can take advantage of the business opportunities available in the domestic and regional markets through trade arrangements such as the Pacific Island Countries Trade Agreement (PICTA) and PACER Plus once it is concluded. The incubator is intended to operate on a commercial basis while also achieving social objectives and hopes to assist small businesses by providing services such as expertise, networks, seed funding and the tools they need to make their ventures successful. Figure 2 below highlights the range of services that could be provided by the Tuvalu Business Incubator focusing on the agro-processing sector:

Figure 2. 2: Services provided by an agribusiness incubator



Source: TNPSO

Based on consultations with the TNPSO, one of the key functions of the proposed incubator will be to build the capacity of local producers to process and package raw materials into semi-finished and finished products. The products could include coconut-related products and fish preparations. Teaching aids, equipment and machinery (oil press, packaging, labelling equipment, weighing scales, etc.) would be made available to train the private sector and demonstrate the benefits of using modern technology to produce well-made products that meet internationally recognised standards.

The expected outcomes will include demonstration effects, learning, improvement in performance and adherence to standards, reduced operating costs due to a reduction in wastage and rework and increased import substitution and exports. The activities that show significant potential include processing and value addition of local copra and other tree crops into virgin oil as well as traditionally prepared foods and beverages such as root crops, salted and dried fish, red toddy and breadfruit for both the domestic and export markets.

The program will aim to be self-sustaining by charging user fees for services rendered to recover costs. It is noted that the government has already allocated a plot of land with a building to house the incubator. In order to set up the incubator, assistance is being sought from development partners. The assistance needed includes technical assistance for capacity building and funds for capital works, i.e. renovation of premises, decoration and specialised equipment.

In summary, the main goal of the incubator will be to nurture innovative early-stage agro-based enterprises. The incubator will provide qualifying new start-up businesses with a set of facilities – physical

facility space, shared services, training, business and legal advice and seed funding – to facilitate their creation and assist them until "graduation", when they have the capacity to "survive" on their own in a competitive business environment. Businesses that graduate from the incubation program will be better able to add value to agriculture, create jobs and contribute to national tax revenues. Beneficiaries will include small businesses, start-ups, women and youth.

While a detailed costed budget is still being developed by the TNPSO, it is envisaged that the project cycle would take at least three years from development to successful implementation followed by evaluation and monitoring. Based on the experiences of the Pacific Islands Forum Secretariat and the Pacific Islands Private Sector Organisation (PIPSO) in developing similar projects in the past, an estimated cost of AUD 2 million over a period of three years would be a reasonable figure to anticipate in successfully establishing a project of this nature.

Based on initial consultations with government representatives, the private sector and civil society organisations based in Tuvalu, there is support for the Tuvalu Business Incubator concept as a means for stimulating participation by local Tuvaluans in private sector activities, in particular those groups which have had difficulty in obtaining credit from banks due to a lack of collateral and have not had access to business training and financial literacy programmes that would enable them to formalise their business operations. The government and development partners are encouraged to partner with the TNPSO to successfully establish this important project.

H. Institutional Investors and States Owned Enterprises (SOEs)

I.1. Institutional Investor: the Tuvalu National Provident Fund (TNPF)

A vast majority of the member funds held by TNPF belongs to civil servants which reflects the current composition of the labour market in Tuvalu where the public sector is by far the largest employer. TNPF has performs its functions very well and it currently pays an annual interest of 8 percent to members with a rate of return of 8.25 percent from its investments abroad which is relatively high when compared to other provident funds operating in the Pacific region.

In the past, most of the funds held by TNPF were kept offshore in term deposits with Australian banks. As part of its recently approved Corporate Plan, TNPF has aspirations to become a more active investor in Tuvalu and bring some of the funds held offshore back to Tuvalu. TNPF is interested in making investments in the tourism industry by purchasing the government-owned Vaiaku Lagi Hotel and also making investments in other prospective industries such as telecommunications and financial services.

The large amount of members' funds held by TNPF makes it well positioned to be a dominant institutional investor in Tuvalu. Provided the planned investments by TNPF in Tuvalu are well managed and implemented it would be a 'win-win' situation for Tuvalu as the returns would benefit local Tuvaluans with minimum leakages from the economy as the profits would not be repatriated when compared to foreign investments. It would also assist in improving the overall business climate in Tuvalu by improving efficiency and productivity particularly in the respective SOEs which are being targeted for privatization, such as the Vaiaku Lagi Hotel, as TNPF would be able to inject much needed capital to modernize its operations. As such, in the national interest and to ensure the benefits from investments in SOEs are retained in Tuvalu, it would be prudent for TNPF to be provided with the first opportunity to consider investment opportunities in SOEs which are targeted for privatisation.

I.2. State-Owned Enterprises (SOEs) in Tuvalu

The following SOEs are in operation in Tuvalu:

- Vaiaku Lagi Hotel;
- National Bank of Tuvalu;
- Development Bank of Tuvalu;
- Tuvalu Telecommunications Corporation;

- Tuvalu Electricity Corporation;
- Philatelic Bureau;
- Tuvalu Maritime Training Institute;
- National Fishing Company of Tuvalu.

Analyses from the ADB's Private Sector Development Initiative (PSDI) notes that that SOEs around the Pacific region control 10 percent -17 percent of the capital, but contribute on average only 2 percent - 7 percent of gross domestic product. SOEs while providing much needed services to the general public are frequently monopoly service providers that deliver at high cost and low quality, which not only represents direct losses but also increases the cost of doing business for the private sector. This analysis also depicts the current situation in Tuvalu for a number of service sectors covered by SOEs.

The issues regarding inefficiency and lack of investment in SOEs in the 2010 DTIS to a large extent still persist in the respective organisations. However, there now appears to be a greater appetite for change and broad political support to privatise some of the SOEs that have performed poorly over the past decade. Noting the importance that the government is placing on developing the tourism industry in Tuvalu, it is unsurprising that the only large scale accommodation provider in Funafuti, the Vaiaku Lagi Hotel, was recently put up for sale via a public tender. This is a positive step taken by government and it will need to ensure that the successful bidder has the financial clout to reinvest in the business in order to modernize the hotel and bring it up to international standards.

While change is gradually taking hold in Tuvalu, further consideration should be given by government to introduce competition in telecommunication sector, especially in mobile services, internet services provision and international gateway services, to the extent possible so as to encourage private sector investment. Tuvalu residents and businesses face significant challenges in accessing affordable and quality internet and telephony services. It is essential that substantial investments are made to improve the ICT infrastructure on Funafuti and the outer islands as a key step towards improving connectivity and creating a conducive environment for business and trade. Assistance should be sought from multilateral agencies such as the ADB and World Bank to carry out further studies on the best modalities to facilitating better ICT services, including public-private partnership on submarine cable or some other form of improved connectivity, with a medium to long-term objective of introducing competition in telecommunication services.

I. Investment Facilitation & Promotion

Foreign investment in Tuvalu is governed by the Foreign Direct Investment Act of 1996 (revised in 2008). The Foreign Investment Facilitation Board (FIFB) is empowered by the Investment Act to consider all proposals for foreign direct investment which either:

- Propose that the government enter into a joint venture for the purpose of carrying out a business activity in Tuvalu, regardless of the form or nature of such proposed joint venture;
- Request that the government provide some form of exemption or special dispensation or relief from the laws or regulations of Tuvalu for the purpose of carrying out a business activity in Tuvalu; or
- Require the granting, issuance, or approval of a licence or permit under an applicable law or regulation.

The FIFB is comprised of seven Members as follows:

- the Secretary to Government;
- the Secretary for the Ministry responsible for finance;
- the Attorney-General;
- the Registrar; and
- three Members appointed by the Minister, two of whom are representatives of the private sector

It was noted in the 2010 DTIS that it takes on average 30 days for a business to be registered and at least 17 of those days involve waiting on the FIFB to grant its approval. The number of days to get the business started could easily take at least two months by the time approvals from the other agencies are received. Based on the findings from the most recent field mission, there does not appear to be much improvement in the above processing times for new businesses to be registered and established in Tuvalu. According to the World Bank's 2016 Doing Business Report, it takes on average 26 days in total for a business to be registered and started in the East Asia Pacific (EAP) region. Tuvalu along with the rest of the Pacific region performs very poorly in the area of starting a business, and while it is not included in the Doing Business Report, based on available data, Tuvalu lags considerably behind the EAP average.

There is an urgent need to streamline the investment approvals process in Tuvalu by lowering the number of days taken by the FIFB to approve foreign investments to at least 5 days, and to adopt a "one-stop shop" model where the Investment Division takes the responsibility of guiding local and foreign investors alike through the plethora of approvals and licenses required in order to establish a business in Tuvalu. In the medium to long-term, the number of procedures it takes to get a business started should be mapped out, simplified and published online to make this information easily accessible to investors.

A key role of the FIFB under the Investment Act is to "…publish, or cause to be published a concise directory for potential foreign direct investment in Tuvalu which shall contain a synopsis of relevant laws and procedures for establishing a business as well as outlining the functions of the Board". The FIFB is not fulfilling this role and further work needs to be done in this area. The checklist which outlines all the relevant steps a potential investors needs to take to establish a business in Tuvalu, along with the relevant charges, should be available online. Furthermore, the government needs to strengthen the capacity of the Investment Division which is understaffed, as currently one Business Development Officer is responsible for business registration, investment facilitation as well as carrying out monitoring activities in Funafuti as well as in the outer islands. It was noted that the Investment Act is under review and the Business Development Officer is also tasked with facilitating the review process.

A key constraint to attracting foreign investment is a regulation which does not permit foreign investors to own more than 40 percent in equity in any investments which they make in Tuvalu. It requires the foreign investor to get into a joint venture with a Tuvaluan who would own a majority stake of 60 percent in the business. Noting that most investors would be bringing capital into Tuvalu and also shouldering most of the risk associated with investing in a foreign country, the '60/40 rule' is a significant impediment to attracting investors to Tuvalu and should be amended as part of the review exercise.

The government also needs to place greater emphasis on promoting Tuvalu as an investment destination using the online platform, as well as its diplomatic missions based in Brussels and Wellington. The Investment Division should be provided with appropriate resources to develop investment profiles of the various priority sectors in Tuvalu i.e. tourism, fisheries and agriculture. Furthermore, specific tailor-made investment incentive packages should be considered by government for each of these sectors in the form of tax holidays and duty free importation of plant, machinery and intermediate goods.

Unfortunately, Tuvalu is not covered by the World Bank's Doing Business Report, however, useful information was gathered from a report prepared by the Pacific Islands Private Sector Organisation (PIPSO) which published its findings in 2014 on the business environment in Tuvalu. The survey noted the following costs for registering a business in Tuvalu when compared to some other Pacific Island countries:

Table 2. 5: Costs for registering a business in selected Pacific Islands countries

	Cost in Local Currency	Cost in AUD
Tuvalu	$100	$100
Fiji	Sole Trade - $1.75 Partnership - $1.15	$1.02 $0.67

	Company: Name reservation - $5.75	$3.37
Kiribati	$100	$100
Niue	NZD 150	$130
FSM	USD 20	$22
Palau	USD 50	$55

Source: 2014 PIPSO Doing Business in Tuvalu Report

Based on the above table, it can be seen that Tuvalu is one of the countries where the cost of registering a business is relatively high. In the business registration index provided by the Inland Revenue Department, it was noted that 182 businesses were registered in Tuvalu which would bring the total income earned from business registration fees to AUD18,200. This is a relatively small amount when compared to the impediment the business registration fee creates for Micro-Small and Medium Enterprises (MSMEs) to formalise their operations and become accounted for in the national statistics. According to the 2014 PIPSO report, MSMEs dominate the private sector landscape in Tuvalu. As accurate data is not available on the number of MSMEs in operation in Tuvalu, various reports and anecdotal evidence gathered during the field mission suggest it to be over 90 percent of the total businesses on Funafuti.

It is therefore important that the business registration fees are lowered to an amount that incentivises MSMEs to formalise their operations by registering their businesses and enable the collection of important data to capture the their contribution to Tuvalu's GDP. It will also allow government to formulate targeted policies that stimulate growth in MSMEs and address key issues such as access to finance and business literacy. This should be addressed in the forthcoming revision of the Investment Act which should be undertaken in the second semester of 2016.

J. Tuvalu National Council of Women (TNCW)

TNCW is an NGO body which advocates for the economic empowerment of women and women's rights in Tuvalu. It has been undertaking work in building the capacity of women to start small scale businesses in the areas of sewing and handicrafts. It also ran a micro-credit scheme for women which allowed for the purchase of sewing machines and other tools and materials that were necessary in facilitating start-ups. However, the micro-credit was discontinued due to a lack of funding.

According to the Tuvalu TPF, women constitute some 78 percent of the labour force in the subsistence economy and 37 percent of income earners. Increasingly they carry out both paid employment and subsistence production tasks in their own families. Women, it is observed, are active in home vegetable gardening, post-harvest activities such as making processed or preserved products and handicraft making and marketing

NCW has directly assisted 50 women to graduate from its training programme who have gone onto establish successful businesses in sewing school uniforms and producing handicrafts. TNCW has raised a number of pertinent issues relating to access to business literacy training that should be addressed by government and in particular DBT, which is the main provider of business loans. They have also requested support from the government and development partners in order to continue the micro-credit scheme in order to create income-earning opportunities for women.

K. Conclusion and Way Forward

Based on the consultations as well as the growth pillars that were articulated in the Tuvalu TPF and TK III, there is potential for Tuvalu to develop opportunities in the tourism, fisheries, agriculture and labour mobility areas. Most outer islanders are not civil servants or engaged in formal employment and therefore without access to TNPF member funds they are effectively shut out from the banking system. Small scale agriculture in the outer islands with the support of international partners could be a means for achieving more inclusive development in Tuvalu noting the significant challenges in securing a loan.

The Government of the Republic of China is already doing commendable work in this area and they have two commercial farming projects that are in operation. These issues will be examined in greater detail in other chapters of the DTIS update.

However, there remains significant work to be done as limited progress was achieved in improving Tuvalu's business environment since the completion of the 2010 DTIS. As a result, Tuvalu's competitiveness as a non-trading nation remains weak. Remoteness causes high transportation costs and isolation, and the lack of scale increases transaction costs. Moreover, insufficient human capital impedes Tuvaluans to explore overseas job opportunities, with declining remittances pointing to structural weaknesses. In this regard, improving the business climate and taking an innovative approach to exploring growth opportunities, including strengthening education and training, particularly in the areas of financial literacy and business skills will be critical to the success of programmes such as the Business Incubator concept in the long run.

The issue of policy coherence is also crucial and the linkages and synergies between the implementation of TK III, the Tuvalu TPF and the DTIS update needs to be properly coordinated and exploited to avoid overlaps and ensure optimum utilization of resources, as funding for trade-related activities and staffing is limited. In this regard, the Ministry of Foreign Affairs, Trade, Tourism, Environment and Labour will play a key role in facilitating communication between the private sector stakeholders and government to ensure policy coherence is maintained and the contributions from the private sector towards trade policy is positively considered.

Chapter 3: Transport, Trade Facilitation and Connectivity

A. Introduction

This chapter provides a policy level brief review of the main challenges faced by Tuvalu's international trade in terms of transport trade facilitation and connectivity. It also suggests some courses of action for decision makers from both private and public sectors to consider bringing improvements to the current and foreseeable situation in these sectors in the next 5 years.

Having consideration for the particular circumstances of Tuvalu's economy and geography, the following remarks are of relevance. Transport analysis concentrates here on shipping and air transport, as road and railway alternatives are not or less relevant given the very short distances and limited volumes encountered in Tuvalu's islands and atolls. Trade facilitation analysis, as described in the corresponding section, focuses mainly on Customs operations at the seaport of entry in Funafuti, which is currently the only office, authorized to receive international cargoes. Finally, connectivity as defined in terms of capacity of a trading country to connect to other partners in the world through liner shipping container services, can, in the case of Tuvalu, only be examined as entirely dependent on that of Fiji.

Keeping the above in mind, this chapter has been based on two main sources of information: the interviews carried out with main players of Tuvalu international trade and transport, such as local responsible authorities and private sector actors, including traders and the sole shipping line; it is also fed from existing reports and studies prepared both at national and regional levels.

The situation of the foreign trade and transport sector in Tuvalu appears simple in its current structure and composition. It may nevertheless need to prepare for a rapid evolution if and when some significant planned or expected changes take place. The proposals put forward here intend to take into account such potential developments, keeping in mind that they would, for the time being, only might become a reality in the medium and long term future. Two are the main possible triggering factors for a quick transformation requiring Customs, shipping and port capabilities to adapt and progress swiftly: the development of tourism and climate change adaptation-related infrastructure projects.

The present survey has benefited from the recent analysis and recommendations made in the Trade Policy Framework (TPF) concluded and officially approved in 2015. Such available material allowed the author to confirm much of the observations made during the field mission and deskwork undertaken for the purpose. This chapter brings some updates to the TPF sections on air and sea transport, but, and insofar as the implementation plan of action contained in the TPF is concerned, it confirms that actions proposed in the TPF remain relevant and fully in line with the conclusions and recommendations of the present analysis.

The chapter is structured around four substantive sections respectively concerning the national and international context; the implementing steps taken since the 2010 DTIS; the current situation as observed in January 2016, and a way forward and recommendations section.

B. Context and justification

At national level the present overview of the Transport, Trade Facilitation and Connectivity sectors of Tuvalu foreign trade must be seen in the framework of two major national reference documents: the Trade Policy Framework, which has been recently passed in 2015, and the latest available draft of TK III national plan, expected to be approved in the first quarter of 2016.

At international level, including regional and global, references are to be found in the plans recently adopted in the context of regional organizations such as PIFS and SPC, but also regional trade agreements such PICTA and PACER Plus, or the SAMOA Pathway, the UN SDGs and WTO.

These many different instruments make the context appear as a complex and difficult one for a small administration like Tuvalu's to absorb and manage. Fortunately, a large majority of the dispositions contained in these agreements and the proposals adopted in corresponding action plans remain in line with the spirit and sometimes the letter of the choices made at National level in the TPF and TKIII.

The actions included in these strategic documents and relating to the sectors considered in this chapter are here briefly described and presented. When both documents refer to each other, note is made of the fact.

B.1 Te Kakeega III

Access to the approved final version of the Te Kakeega III (TK III) dated March 2016 made it possible to identify the strategic thinking of highest Government officials as regards the future of the country in the years 2016-2020. Understandably, given the country's oceanic situation and widespread island territory, transport, both national and international, is addressed in several different sections of this high-level document.

In its analysis for Strategic Area 5: Fale Kaupule and Island Development, the master plan suggests "*Building or upgrading OI (outer Islands) boat harbors to expedite cargo handling and to improve the safety and security of vessel and passenger track will be a development priority. Options to put amphibious aircraft and helicopters into inter-island service will be evaluated, and if either or both options show economic promise (with minimal subsidies – if required) such transport services will be developed." In its Annex 5, as part of the corresponding Action Matrix, the plan* identifies the goal to "*Provide quality public service and create more opportunities for the sustainable development of all islands*". Logically, this implies improving transport to outer islands and suggests the undertaking of feasibility study on domestic transportation (sea and air), Feasibility study to improve domestic transportation (sea and air), to design inter-island services quarterly schedule to meet Ministry of Home Affairs and Rural Development MHARD needs for consultations/M&E/trainings and delivery of projects materials.

For strategic sector no.6 on private sector development, employment and trade, the defined objective is "*To be the engine of growth and development providing commercially sustainable service."* For the purpose, the plan identifies supply-side constraints to be addressed "*before Tuvalu will begin to see the full benefits of trade*". These include limited, unreliable and costly air and sea transport services.

Lastly, the more extensive reference to the sector can be found in area 9, on infrastructure and support services, the goal of which is the "*Provision of Quality and Efficient Infrastructure & Support Services".* The TKIII draft plan recalls the list of physical infrastructures listed in TK2 which have not been realized. These include the "*assessment for a domestic air service and the construction of a new international airport that can land bigger aircrafts. An open skies policy and an international airport with a longer runway that meets ICAO standards would have significant multiplier effects on the*

economy. Potentially higher numbers of tourist arrivals and demand for accommodation, food, transportation, cultural artefacts and other goods and services would result in greater inward investment to meet the new demand. Increased demand would also increase incomes and employment thereby reducing Tuvalu's brain drain." This reflects the very central relevance and expected impact of the improvement of air transport facilities and services.

The document also emphasizes the expected "*spillover effects of higher tourist arrivals would also be felt on the outer islands in the form of increased investment in port and harbor infrastructure, water and sanitation and the development of tourism clusters..." "... In addition, the landing of larger aircraft would allow greater quantities of fish and other high-value products to be airfreighted for export. A more competitive aviation market would reduce the cost of travel for both passengers and cargo."*

Expectedly, the TKIII plan dwells into the relevance of infrastructure for Outer Islands: "*Outer islands need boat harbors particularly Niutao, Nanumaga, Nui and Nukulaelae for better safety in travel and speedier loading and unloading of cargoes. The experience with the Vaitupu boat harbor suggests that boat harbors crowd in a lot of economic activities on the island as well as the country. The number of boats and sea crafts on Vaitupu increased because of the boat harbor, and in turn more fish is available for sale and hence a drop in the price of fish in the community. There are social impacts as well, which include the use of the harbor area as an informal communal meeting place where men gather particularly at night for their daily yarn."*

Regarding air transport services and infrastructures, the TK III highlights that *"... Air transport is provided by Fiji Airways, [...] the limited air services currently provided could be significantly improved by introducing an open skies policy to increase competition and building a longer runway that meets international standards to accommodate aircraft with higher passenger and cargo payloads. The Ministry of Transport and Communications will commission studies to determine the feasibility of having a domestic air service with airfields on a number of the outer islands."*

And concludes that "*The amphibious aircraft that operated here in the late 1970s has proven its technical viability and certainly its social and welfare benefits to the Tuvalu community. It was certainly cheaper than any comparable land-based air service available at the time and that situation remains true to today. Land based aircrafts are not only expensive they also require airfields to land on and these will take up land spaces from the islands' very limited land area. GOT will consider a study of the various transport options and decide on the most optimal alternative for Tuvalu."*

B.2.Trade Policy Framework

As mentioned, the Tuvalu Trade Policy Framework constitutes a central reference for the issues considered in this chapter. The analysis and recommendations included in the TPF which are relevant on transport and trade facilitation may be summarized as follows:

On sea transportation, the TPF recalls that TKII already noted " … *the provision of adequate, efficient and cost-effective transportation as a key to Tuvalu's trading relations as well as overall national development"*…The document identifies inefficiencies in that *"...vessels provide transport services, including for both cargo and passengers, between Funafuti and the Outer Islands…* but *..."As is common in many Pacific SIS, while a sailing schedule is in place for both vessels, infrequent and irregular service is a continuing challenge."* And expects the delivery of the new vessel, MV Nivaga III, in December 2015 "….*will improve inter-island shipping services for both goods and people."*

In a brief analysis of the situation of the ports, at Funafuti and Nukufetau, the TPF quotes the 2012 Tuvalu Infrastructure Strategy and Action Plan (TISIP) to assert "*that, based on current figures for the movement of goods and people, the capacity of the port services on Funafuti should be sufficient for the*

next 25 years. Immediately after the TPF nevertheless notes that "*The port infrastructural challenges call for urgent measures to be undertaken and the Government has sought external assistance in this regard. Some assistance is being provided by the ADB.* Regarding the management of the port operations, the TPF recommends considering "*to corporatising maritime services, especially harbour operations, as has been successfully undertaken in other countries, even some of the smaller PICs."*

On Air Transportation, the TPF, recalls, as does the TKIII, that "*there is clear recognition of the critical importance of good transport links for the promotion of trade, including tourism, and achievement of other national development objectives."* and that *"Although seaplanes had accessed the Outer Islands in the past, there are currently no air services between Funafuti and the other, widely dispersed Outer Islands and the viability of an internal air service should be explored, preferably in the context of a comprehensive study of domestic transport needs for passengers and cargo over the medium- to longer-term."*

The report of the TPF offers then a brief description of the current sole regular service provided by Fiji Airways as well as of the Air Services Agreement (ASA) between Fiji and Tuvalu. It announces that "*the Government of Tuvalu is exploring possible future arrangements, including through discussions with the Fiji Government and Fiji Airways."* This was confirmed by the present analysis, although, opposing the TPF assertion, the expiry of the bilateral agreement with Fiji could not be verified. On the contrary, this agreement, in its text, does not stipulate any expiration date.

The TPF also suggests that *"A more flexible ASA might open new opportunities for Tuvalu to, inter alia, designate other carriers also to operate between Funafuti and international ports that might be more beneficial to Tuvalu in terms of lowering costs and offering more diverse services."* And substantiates the proposal saying that "*Fares between Funafuti and Suva are very expensive … because of lack of competition … and … the high cost of operating a smaller aircraft ".* On air traffic control management, the TPF recalls that "*At the present time, through a regional arrangement, the Government of Fiji administers the upper airspace of Tuvalu along with the airspaces of Kiribati and Vanuatu. All three countries are seeking to negotiate a new arrangement with Fiji for the distribution of funds received for the upper airspace that, in Tuvalu's case, would result in an increase in revenue. Agreement in this regard might require the technical assistance of the International Civil Aviation Organisation (ICAO) which has a key role to play in such matters internationally. "*

Among the many challenges "*in terms of upgrading aviation facilities*" the TPF notes that "*Most critically, the Funafuti airport does not meet international standards for safety on several fronts, including the fact that there are no navigation aids; fire service cover is inconsistent and inadequate; no run-way lighting means flights are restricted to daylight only; and there is no perimeter security (fencing) which allows public free access to the runway and adjacent areas."*

The recommendations included in the TPF which relate to Trade Facilitation and Transport seem fully relevant. They are highlighted in section V of the chapter.

B.3. Relevant regional instruments

As highlighted by authorities and traders alike, as well as noted in the literature, existing regional arrangements in the Pacific, to which Tuvalu may or may not be part, offer real opportunities for cooperation and mutual assistance for trade facilitation and transport sectors. Both the Oceania Customs Cooperation Organisation (OCO) and the Pacific Islands Forum offer a substantive assistance in Trade Facilitation. The Pacific Island Countries Trade Agreement (PICTA) Trade in Services Protocol includes, among others, commitments on transport services. Transportation is identified in the protocol as a priority sector reflecting the Pacific region's relevance for the transport sector to promote regional trade, as well as social and economic development.

According to the assessment made by the Pacific Community (SPC), maritime transport remains a facilitator of economic growth, but is often hampered by inefficiencies in service and infrastructure crucial in view of the heavy reliance on sea transport for freight trade. The Schedule of Commitments highlights the prioritization of transport sector openness in the Pacific although at a low level of commitment for both market access and national treatment for Maritime Transport Supporting Services; medium level of commitment for Passenger Transport, excluding cabotage, vessel chartering with Crew, and maintenance and repair services; high level of commitment is currently seen only for Freight Transport Services.

On air transport, the Pacific Islands Air Services Agreement (PIASA) supports, through a market opening approach, the need to combat high fares, increase the quality of services, ensure better coordination of schedules, increase competition and offer better opportunities in the Pacific. In this case also, the SPC considers that commitments under PICTA complement PIASA arrangements, and carry the potential to deliver significant improvements in areas such as code sharing, pilot and crew training, and fleet maintenance and repair.

The SPC sees that potential benefits of PIASA and PICTA services for Tuvalu would include previously inaccessible routes and areas to be serviced at lower freight rates, increase of international and domestic services, investment in ports, roads, access points, intermodal hubs, harbours, terminals, and storage facilities/warehouses. In terms of actual implementation though, progress is more tangible in the sea transport area than in air services. Nevertheless, it must be highlighted that, both from a regional institutional perspective, these instruments have allowed the creation and operation of a set of decision making and common policy development organs. These in turn have allowed Tuvalu to benefit from the assistance of networks of peers and experts of the Region which materialized in the operation of the regional framework for transport, being part of a Shipping Commission, transport sector assessments and most relevantly benefit from the assistance of major development partners.

C. Tuvalu DTIS 2010 implementation

C.1 Customs improvement

The DTIS 2010 document states that "*The main administrative issue facing the Department of Customs is the introduction of ASYCUDA, an area where the IF is well-placed to assist. Work should be synchronised with that of the Oceania Customs Organisation (OCO), which is responsible for Customs reform in the region. Initial contact with the OCO suggests that the IF may be able to contribute usefully in this area, with a feasibility study a matter of immediate priority, possibly in conjunction with other regional countries such as Kiribati. A move to ASYCUDA should be seen as an advance on the existing system. Amongst other things it would help improve risk assessment and better co-ordinate data across government*."

In January 2016, the above assessment was confirmed during an interview with Customs officials. Nevertheless, the request for funding of an ASYCUDA installation project is still pending and no further action was taken on the matter, although contacts were made in January 2016, for the ASYCUDA Regional Coordinator and the Director of Customs to assess the best timing and requirements for the implementation of the DTIS recommendation to start being effected.

C.2. Ports and maritime shipping services

The DTIS 2010 document notes, among other details, that: "*The small size of the port means that loading and unloading can be conducted relatively easily. … Storage facilities are good, although space is limited. … Some business owners consulted under the DTIS were highly critical of the Port Authority.*

Problems with the forklift at the Port and slow work by stevedores has meant delays. The cost of moving a container from wharf to storage shed (a journey or approximately 50 metres) is now $117, a figure which many businesses struggle to cope with...". This description matches the observations made in 2016, time and increased volumes having nevertheless added to the problem.

The cost for handling a 20-foot container at the port is now AUD 300, more than doubling the tariff over five years. Now, depending which operations are included in this amount (for instance, wharfage, ship to shore loading/unloading, lift in / lift off, handling, storage, etc.) the figure may be high or not. The consulted officials and traders confirmed that AUD 300 was the single flat rate payment made to the port authority for taking delivery of the container. Reportedly, Port authorities would not be in a position to confirm whether the AUD 300 charged would allow recovering in full actual cargo handling and storage costs incurred by the Port. To this regard, interviewed officials mentioned that there was an urgent need for assistance and training of port officials on the development and establishment of a proper Port tariff and accounting system that would reflect actual costs.

Also the handling equipment operation troubled by repair and maintenance issues is still there. Some assessment has been made of AUD 10.5 million financing for the purchase of forklift and tractors equipment and spare parts. Professional training for the management and operation of a repair shop at the port was also mentioned as part of the Port urgent assistance needs.

The conclusions of the analysis on trade facilitation were: "*Tuvalu should take as much advantage as possible of opportunities for regionalisation, given the limited size of government. A collaborative feasibility study on ASYCUDA under the IF in conjunction with Kiribati is a priority*."

There are three relevant recommendations in the DTIS 2010 regarding Air Transport, Trade Facilitation and Port operations, all referring to respective reviews and studies, namely:

- *2.8: Continue to review and support international air links and to improve the reliability of domestic sea services*
- *3.5: Conduct a feasibility study for ASYCUDA, in conjunction with Kiribati, with a view to making a detailed assessment of actual needs in each country, and developing a regional proposal reflecting the preferences of each administration in terms of approach, i.e. national, regional or a mix of the two.*
- *3.8: Consider reviewing wharf charges and stevedoring performance with a view to reducing the costs for businesses and speeding up clearance times*

The implementation of these recommendations is as follows:

Action 2.8: Continue to review and support international air links and to improve the reliability of domestic sea services

- Transport department: A new boat Nivaga III arrived in Funafuti in November 2015 in order to help improve domestic sea services. An ongoing work is also undertaken on the harmonization of travelling fairs and freights domestically to ensure equity for all the islands. In terms of infrastructure, there is the need to address boat channel or rebuild ramps as most of them were destroyed by the Cyclone Pam.
- Civil Aviation Department: Consultation is being held with Fiji Airways and the Government of Tuvalu on the frequency and fares of flights. This consultation is also held at government level between Tuvalu and Fiji. It was decided to conduct meeting every six months with the two Governments on this issue. However, in January 2016, such a bilateral meeting had not taken place as confirmed during the interview with the Director of Civil Aviation for the present study.

Action 3.5: Conduct a feasibility study for ASYCUDA, in conjunction with Kiribati, with a view to making a detailed assessment of actual needs in each country, and developing a regional proposal reflecting the preferences of each administration in terms of approach, i.e. national, regional or a mix of the two.

- A feasibility study was done including the Terms of Reference to change from ASYCUDA to PC Trade 12. Thanks to UNDP funding, the Government of New Zealand installed the system. Capacity training of the customs staffs and the upgrade of the PC Trade 10 to PC Trade 12 are expected to be undertaken though it was already planned in June 2015.[22]

Action 3.8: Consider reviewing wharf charges and stevedoring performance with a view to reducing the costs for businesses and speeding up clearance times

- No review was done. In early 2015, the charges on wharf were increased in order to increase revenue collection with a target of AU$1.3 million compared to AU$400,000 before increase.
- There is still need for providing financial assistant to improve wharf facilities, and the stevedoring performance.

D. Situational analysis

D.1 Trade and transport facilitation issues

According to the experienced traders interviewed during the field mission, the main procedural difficulties faced by cargo imported by sea occurred at the port of Funafuti. The two main reasons invoked are: the slow Customs clearance process for goods and the poor handling and high terminal charges in the port transit process.

The Customs process was considered slow even though, according to the same sources, goods are usually cleared within 3-4 days after they are unloaded from the ship and are allowed a 15-day free of charge storage at the port. The rationale behind this appreciation is that Customs and Port authorities are usually informed, by Customs brokers and the shipping line, well in advance of the arrival of the ship and the goods. Therefore, a pre-arrival clearance process could be completed and allow for immediate delivery upon the ship's arrival. Such view was not challenged by Customs, which in turn minimized the actual delays and clearance times, adding that for most traders, it was actually convenient to keep the cargo stored at the port for a few more days and take several deliveries of different parcels at a given time.

The high port charges, as already mentioned, amount to AUD 300 for a 20" container. There was no available explanation for the tariff neither by the authorities or the users other than the need to ensure higher revenue. As declared such a tariff was estimated rather than calculated, as the actual operating costs for the port authorities were not clearly known. Two ships call on average per month at the port of Funafuti. These are operated by Pacific Direct Line which is the sole shipping line servicing Tuvalu as part of the Central Pacific Shipping Commission discussed below.

High sea freight rates were mentioned by one major trader and member of the Parliament, Hon. Mackenzie Kiritome claiming that Tuvalu customers would endure much higher maritime costs for the Suva-Funafuti route than neighbouring countries served by the same line over longer distances. In his statement to the Parliament MP Mackenzie in May 2015, expressed that "*Expensive freight that we are paying to the current and only shipping liner. The freight cost that is currently charged by this shipping liner is very high and unreasonable if compared to what our neighbour countries are paying. We are currently paying around AU$3,000, Suva/Funafuti for a 20ft container, while Kiribati people are paying around AU$2,200, Suva/Tarawa for a 20ft container. We are paying the expensive freights when*

[22] These activities were still not implemented in January 2016 as confirmed during the interview of the Director of Customs.

in fact it only takes 2 and half days from Suva to Funafuti while it takes about 5 days from Suva to Tarawa."[23]

On the relationship of the Funafuti traders with their counterparts in the outer islands, the practice is that orders from customers in islands would come by phone/internet or visits to Funafuti or through relatives in Funafuti. Payments would have to be done at the bank before goods could be shipped. Sometimes, when payment had already been made, goods would not be available from existing stocks. Delivery to outer islands would then have to wait for the next international shipment to arrive. This would entail delays and waiting times in the delivery. Bigger stocks in Funafuti would not help as storage space is limited, but advance planning, 6-12 months ahead of orders, could help interisland shipping and foreign imports programming.

All consulted traders would agree on the fact that shipping to outer island was risky in current conditions. Customers in the islands complained about frequent losses and damages of goods ordered and paid for in advance before being shipped to them (sold FOB Funafuti wharf). Losses and damages would occur mainly due to ship to shore handling and due inadequate conditioning of the cargo at both ends of the voyage between Funafuti and the destination or during the journey to the outer island during severe weather conditions. Claims are settled by Marine Department up to only 12 months after being filed. One trader mentioned they had recently changed their policy and decided not to file these claims anymore on behalf of their clients in the outer islands but ask them to do so directly with the Marine Department responsible offices. This would oblige these outer island traders to come to Funafuti or entrust their proceedings with intermediaries in Funafuti.

A most surprising claim, as an example of the lack of proper working conditions at the port, was that Marine offices of the port authority in Funafuti had not been reachable due to a total lack of communication for quite some time, reportedly several months. No operating telephone fixed line, no internet, or mobile phone connection. This of course was also true for counterparts in foreign countries. The authorities claim that the port could always been reached through radio signals on a 24-hour basis.

A trader proposed a simple and possibly quite effective solution was for traders in Funafuti to be allowed to consolidate their goods from different suppliers in Funafuti to outer islands. This would consist in gathering the orders into tailor-made sealed plastic boxes which could be re-used by the interisland ship carriers. The packaging would better protect the cargo from weather conditions and ship to shore handling. This could also help suppliers in Funafuti sell CIF to outer islands rather than the current FOB, and possibly get lower shipping rates through planned regular frequency shipments.

A proof of concept could be undertaken by traders themselves to consolidate increasing volumes at Funafuti. If tests prove successful, groupage services could be established in Funafuti which would not only improve cargo safety but also quality of shipping services as a whole, preparing for future exports from the outer islands. Increased volumes may also help attract new players to develop grouping and shipping services.

D.2 Customs improvement

[23] This high fare would need to be confirmed through data that would not be made available to the mission by the shipping line representative, due to their confidential nature. Another reference on paid sea freights was obtained from a trader for a 20-foot reefer container shipped from Los Angeles at 4500 USD (approximately AUD 6300) carrying frozen food. Such a total fare would have to include the transshipment in Suva and would leave the Los Angeles – Suva leg in AUD 3300 or less than USD 2400 to cross the Pacific Ocean, unload, store and reload a reefer container in Suva. If the mentioned AUD 3000 is confirmed for Suva-Funafuti, the mentioned reefer container would have been charged an unlikely low fare on the Los Angeles-Suva stretch almost equivalent to the much shorter voyage from Suva to Funafuti.

The Customs administration in Tuvalu is currently staffed with 11 Customs Officers of which two are specifically dedicated to Customs clearance process. The total of customs declarations processed annually amounts to approximately 1500 of which about 250 are related to Government imports and therefore tax exempted. The total revenue generated annually is about AUD 3 million. A simple calculation shows that each Customs inspector has to process about 3 declarations per day, which looks like a very low figure. Unless these inspectors are employed for many tasks in addition to clearance procedures, it would mean the Customs office of Funafuti is sufficiently staffed.

The Customs Director showed a strong interest in adopting and implementing ASYCUDA World (AW) system developed by UNCTAD although at the same time formulated concerns about the cost of operating the AW given the current small scale of operations handled by his administration. He expressed great relevance in the potential benefits of the different modules offered by the AW in particular the Higher Management supervisory functions, the Manifest, Warehousing management and Port gate modules. Extremely useful would also be the functionalities relating to risk management, valuation, tariff, customs legislation, direct trader inputs, interfaces with shipping lines and customs brokers, etc. A networked solution connected and shared with other ASYCUDA equipped Customs offices in the Region, in particular in Fiji where the regional center of ASYCUDA operates, could suit the needs of Tuvaluan Customs at lower operating costs than an individual system.

These would help Tuvalu Customs to tackle some important issues currently challenging the performance of the administration in particular regarding small frauds observed in shipments loaded in private ships and disembarked un-manifested in Tuvalu shores; detailed bills of lading missing for consolidated cargo shipped in LCL containers documented only by means of a mother bill of lading; or, frequent undervaluation of consignments originated in the Popular Republic of China with commercial invoices showing values well under known levels.

Among the essentials that the Customs administrations would need to cater for in the coming years the following were mentioned as priorities: at short term, the renewal of computer office equipment (hardware and software) beyond the recent acquisition of a network server already in place at the ICT department; at medium term alternatively the reorganization of the office layout of the current long room in the Government building, or, preferably, the move of the long room and Customs clearance process operation to a new office to be located at the port adjacent or as part of the Marine offices.

Beyond the planned move to the PCTRADE + system, a New Zealand statistical system for data reconciliation, and if and when the ASYCUDA System can be made operational in Tuvalu, a stable internet connection and communication network infrastructure for Customs should be secured.

D.3. Ocean and interisland shipping

Tuvalu is now party to a sub-regional ocean shipping arrangement promoted in the framework of the Pacific Community for 6 countries comprising Tuvalu, Kiribati, Nauru, the Republic of Marshall Islands (RMI), and Wallis and Futuna. The Central Pacific Shipping Commission (CPSC) became operational on 1st January 2014. The CPSC main objectives are to facilitate access to international markets, provide adequate and reliable frequency of shipping services, monitor conditions for cost-efficient shipping services; and promote sufficient or controlled competition.

As reported by the Pacific Community (SPC), the second annual general meeting of the CPSC held in Majuro, Marshall Islands, in September 2015, expressed its satisfaction with the function of the Commission and entrusted the SPC to support further operational improvement through the following actions:

"i. Progress a medium-term economic analysis of CPSC, contingent on data collection by the national shipping councils in CPSC member states. ii. Provide the terms of reference for the medium-term economic analysis to the countries for their input. iii. Propose amendments to the current agreements, by-laws and associated legislation to address technical inadequacies and procedural improvements arising from changes in circumstances over the years and submit these for consideration."

In addition, following the adoption by the United Nations of the newly established Sustainable Development Goals, a Multi-Stakeholder Partnership for Small Island Developing States has been currently registered with the United Nations by the SPC with the aim of improving the shipping services of the Central Pacific Shipping Commission (CPSC). These are encouraging developments that should benefit Tuvalu as member of the CSPC and thereby its foreign trade. The deliverables and resources relating to the partnership are presented as follows:

Table 3.1: Deliverables and Resources of the CPSC

DELIVERABLES

Deliverable	Date
Increased frequency and regularity of ship visits	2016
Decrease in freight rates	2016
Increase cargo (TEU)	2016

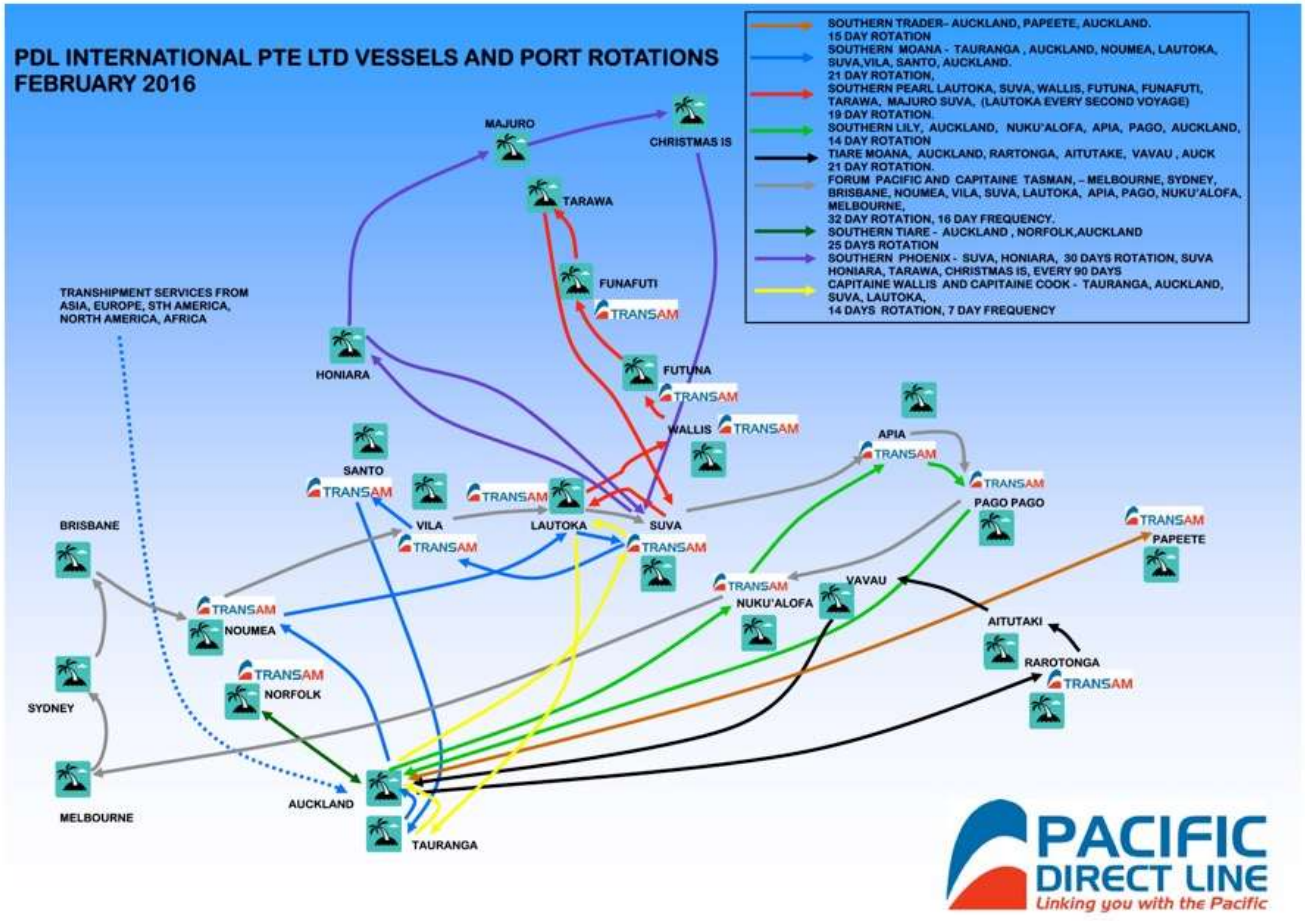
RESOURCES DEVOTED TO IMPLEMENTATION

Type	Details
Financing (in US$)	$
In-kind contribution	US$5000 per member country, USD10,000 per shipping company - these are annual fees.
Staff / Technical expertise	Technical Advice and secretarial role provided by SPC

Source: https://sustainabledevelopment.un.org/partnership/?p=7591

In the case of Tuvalu, the shipping line registered to provide services in the framework of the CPSC operation is Pacific Direct Line (PDL) headquartered in New Zealand. A total of four shipping lines have registered with CPSC, but as mentioned previously, for the time being, only PDL operates as a provider of ocean shipping services to Tuvalu. Given the country only international seaport, PDL ships call only at Funafuti to bring inbound containerized cargo loaded in Suva along a two-week vessel route as described in the figure 3.1.

Figure 3.1: PDL International PTE LTD Vessels and Port Rotations (February 2016)



Source: Pacific Direct Line web page accessed in February 2016

The still small but regularly increasing volumes of containerized trade at the port of Funafuti are reflected in the table 3.2. The table shows that the number of offloaded boxes has stabilized in years 2014 and 2015 as compared to 2013. This might already be seen as a positive impact of the CPSC entering into force in 2014. Increasing numbers over the three years, both on monthly and annual basis, are due to an increase of economic activity, including project activities and consumption goods. Some months appear to show higher activity, notably April, September and November, although a longer time series would be needed to induce a seasonal trend. A further increase in traffic might attract either new players among CPSC registered shipping lines or would lead PDL to deploy a third vessel and assign it to service Tuvalu's trade.

Table 3.2: Registered container traffic Suva-Funafuti in years 2013-14-15

Month Year	1	2	3	4	5	6	7	8	9	10	11	12	**Grand Total**
2013		34	33	103	31	38	50	49		57			**395**
2014	46	20	43	34	42	33	50	32	56	24	76	24	**480**
2015	70	45	37	89	58	52	15	70	96	9	65	42	**648**
Grand Total	**116**	**99**	**113**	**226**	**131**	**123**	**115**	**151**	**152**	**90**	**141**	**66**	**1523**

Source: Pacific Direct Line General Management (February 2016)

While ocean shipping remains a fully private operated sector, interisland shipping has found interesting private and public solutions recently developed in neighbouring countries. In Tuvalu, interisland

shipping is still a fully public service entrusted to the Marine Department. Transport of passengers and cargo in Tuvalu is ensured by three vessels, the more recent of which is MV Nivaga III, depicted below.

The service schedules and routes of the vessels are published on a quarterly basis by the Marine Department, displayed for public information in all Government offices and distributed by email to all registered recipients. Basically the ships routes to the outer islands are divided in three regions: southern, central and northern islands. A flat subsidized rate is applied regardless of the destination, respectively for cargo and passengers. While the mere existence and provision of these services is a considerable achievement for a small economy like Tuvalu, improvements could be brought. For instance, a franchise shipping scheme could be envisaged.

Models to be adapted to the specific realities of Tuvalu can be found in recent experiences in the South Pacific Region, such as the Solomon Islands or Vanuatu[24].

Through franchising schemes, Tuvalu government could contract private operators or share the operations to deliver inter-island cargo shipping services which would supplement the current public offerings. A stepped approach for the development of the franchise or similar scheme, could include a first stage in which consolidation of cargo is operated by local traders in Funafuti pooling together their respective orders to outer islands customers and pack them to ensure parcel groupage and safe conditioning in small water and weather proof containers. A second step would lead these traders, acting as freight forwarders, to arrange for international shipments to be unpacked at Funafuti port and transshipped directly to outer island transport. A third stage, upon fulfilment of the smooth and successful operation of the first two, would allow these operators to actually offer interisland transport services, either through private vessels or using those of the Shipping and Ports department.

D.4 Ports and shipping connectivity

Liner shipping connectivity as commonly defined and understood along the lines of current worldwide index reference (UNCTAD LSCI) is, in the case of Tuvalu, currently limited to and fully dependent on the operation of the Central Pacific Shipping Commission. The CPSC operates with the port of Suva as a consolidation hub for feeding services to and from Funafuti. In practical terms, with two ships calling a month at the Tuvaluan port, the main characteristic of the current situation is that possible improvements may only come from the decision of the solely operating shipping line to increase call frequencies or ships capacity.

For such a change to happen, two factors appear relevant: a modernization of the ship to shore process

[24] http://www.unescap.org/sites/default/files/I.6.Franchise-shipping-scheme-ADB.pdf, http://www.unescap.org/sites/default/files/I.3.Vanuatu-Inter-island-shipping.pdf

of the Funafuti port; and, a significant increase in Tuvalu maritime trade volumes. The first issue seems definitely easier to address and may well lead to the second process to develop. According to both users and authorities of the port, while infrastructure development may well be needed at medium term, the most urgent actions relate to equipment and port management processes.

The improvement of the cargo handling equipment will require an investment of approximately USD 10.5 Million, as assessed by the Director of Marine, Shipping and Port Services. This should be supported by intensive training of Port personnel, currently 72 in total of which 21 are mid and high level ranking officers, and about 50 manual workers such as stevedores and mechanics affected to the maintenance and repair of the machinery. According to users, spare parts and repair operations are among the causes of important delays in the transit of the cargo through the port, mainly for yards manoeuvring, as ship to shore unloading operations are ensured by geared ships equipped with their on-board cranes. Training would also be required as matter of urgency in the management levels of the Port, including the adoption of port management software system, port statistics and tariff or port pricing systems to ensure proper return of investment.

A recent initiative by the GOT and financed through a grant from ADB, must be highlighted that would help strengthening some berthing and cargo / passenger unloading facilities in selected outer islands. The ADB Outer Island Maritime Infrastructure Project expected outputs will be *"(i) improved and rehabilitated maritime infrastructure in the outer islands, and (ii) improved capacity of the outer island communities and the Department of Marine and Port Services of the Ministry of Communication and Transport (MCT) to operate and maintain facilities.*" [25]

This might represent a major step towards the development of commercially viable inter-island shipping services. Marine facilities development and other planned infrastructure reforms, including those affecting air transport and cargo terminals in outer islands, should be supported by corresponding operational and maintenance training to ensure long term sustainability and smooth effective functioning of the physical capacities in place. The involvement of the private sector in the provision of these services is recommended and is reflected in the actions proposed in this chapter.

D.5. Air transport services and airports

Tuvalu is currently served by only one air link, which connects Funafuti to Suva in Fiji. This is a fact. Contrary to a widespread understanding, no legal obligation ties up the country to Fiji. Other routes can be opened at any stage in time and with any other country or territory in the world. If it hasn't been the case, it is because of two main reasons: 1) the small population of Tuvalu which makes it a small domestic market for a national company to develop; and 2) the existing location and characteristics of the airstrip which is used in Funafuti, which does not allow for a 737, a most common airplane in neighbouring countries, to land at Funafuti. The fact that tourist accommodation and facilities found in other countries of the Pacific are not either available or comparatively much less developed in Tuvalu, also impacts negatively on the attractiveness of the place for the less adventurous potential visitors.

According to the Civil Aviation officials, the most pressing challenges for the international aviation sector in Tuvalu are nevertheless linked to the currently operating arrangement in the framework of the bilateral air services agreement signed with Fiji in 1989. This agreement, which does not have an expiry date, suffers, among other aspects, from two main constraints, which directly limit future developments for Tuvalu: there is no designated company on the Tuvaluan side and freight services are not included. While the agreement, provisions are there for an airline to be designated by Tuvalu, in practice, the Suva-Funafuti route is only operated by Fiji Airways. A simple amendment agreed between and by competent authorities in both countries would suffice to open the service to a Tuvalu designated airline

[25] http://www.adb.org/projects/48484-003/main

and freight services on either or both sides. The lack of authorization for freight services is seen as a major obstacle to develop the transport of cargo by air to and from Fiji.

Another important issue that has prevented other potential interested companies to serve Tuvalu is the fact that the Air Service Agreement with Fiji does not contemplate the multi-point service to and from other cities in the region in combination with the Suva- Funafuti route. Interested parties from Vanuatu potentially inclined to develop a service Port-Vila –Funafuti- Suva were discouraged by the impossibility to do so. It would require respective bilateral agreements between Vanuatu and Tuvalu and Fiji and Tuvalu to authorise such a service, allowing for instance connections between Port-Vila and Suva to taking passengers between Funafuti and Suva.

There has been some recent attempts by the Civil Aviation of Tuvalu to revisit the agreement with Fiji to deal with the three issues mentioned – no Tuvalu designated airline, no freight service and restrictions on multi-point services - as well as to include the designation of other airports in Fiji, including Rotuma and Nadi. The talks initiated in 2013 and carried on in 2014 have nevertheless not been pursued in 2015 for reasons unknown to Tuvaluan authorities, which, for more than a year now, have not received responses to their requests to Fijian counterparts. One obvious reason might be the fact that the present services, with 2 flights a week in each direction, offer Fiji Airways a very high rate of occupancy of the 68-seat ATR 72-600 airplanes deployed as of June 2014 for the route (see table 3.3).

Table 3.3: Inward and Outward passengers for 2014 and the 2015.

	2014		2015	
Month	**Inward**	**Outward**	**Inward**	**Outward**
January	248	390	312	514
February	181	293	302	508
March	229	339	378	388
April	299	301	332	392
May	316	256	426	483
June	334	329	310	490
July	368	442	503	497
August	398	350	432	406
September	363	363	434	504
October	339	397	445	462
November	397	431	431	451
December	402	292	420	444
Total	**3,874**	**4,183**	**4,725**	**5,539**

Source: Tuvalu Civil Aviation Directorate – provided on 27 January 2016.

Tuvalu has now through Fiji access to a costly and limited but regular air connection to major destinations in North America and Asia, and, from there to the entire world. Conditions could improve through competition among different carriers but that would require both more tourist traffic, and an airstrip that would allow for jet planes to land in Funafuti or elsewhere in Tuvalu.

The plans for the latter issue are now well advanced and consider three alternatives on which it is foreseen to see the Government to take a decision in the course of the year 2016. The first option looks at a further improvement of the current airport with an extension of the runway. The other two envisage the relocation of the airport. One would place the new airport in the same island of Funafuti which would entail the accommodation of the population affected by the construction in a different area of the atoll. The third option considers the construction of an international airport in the island of Nukufetau and would leave the current Funafuti facility to operate as a domestic airport.

Developing a new airport in a different island would offer the possibility to work on a "greenfield" project, where building design and operational model can be envisioned with less restrictions than when improving on an existing facility like in the case of Funafuti. On the other hand, it would mean having to bear with higher operating costs for running two different airports. It would also require ensuring regular services to and from the country's most populated island of Funafuti, thereby impacting on voyage costs and times for passengers travelling to Funafuti to and from abroad, and first and foremost Tuvaluans. As mentioned in TKIII, a feasibility study should bring some light on a difficult decision to be made.

In any case a new airport would be a game changer that would contribute to boosting Tuvalu's capacity for air services for both passengers and freight. It will require new ground facilities and services to be operated by trained personnel to run airport terminal services for passengers, luggage and cargo handling as well as freight storage services. This needs to be planned well in advance as part of the decisions to come in 2016 regarding the improvement of air transport facilities.

E. The way forward, recommendations and priority actions

As observed in many different studies, including those reviewed for the purpose of this chapter, the situation of trade facilitation, transport and connectivity in Tuvalu shows a lot of room for improvement. At the same time, such a view should be nuanced. In recent years, and with limited means, Tuvalu has managed to adapt to an international trade context made for large economies with massive volumes, and its current setup serves the purpose of a minimum trade and contacts with the outside world.

Such an adaptation has followed a tailor made approach by which Tuvalu chose to benefit from all available relevant regional initiatives which make Tuvalu part of a larger system better inserted in the global trading networks; a space in which Tuvalu can share knowledge and experience with equal counterparts and benefit from the assistance of larger economies. This is, in view of the mission, a judicious choice that should continue governing policy options for transport and trade facilitation in the coming years. With this overarching principle in mind, below are listed proposed policy lines that should guide recommended actions for the next five years:

A. Proposed policy lines

Trade facilitation:

- Follow the basic rationale and stick to WTO Trade Facilitation agreement;
- Continue cooperation with Oceania Customs Organisation Secretariat;
- Prepare for increased trade and international passenger traffic.

Transport:

- Take advantage of regional agreed instruments for improvement of transport services;
- Rely on Secretariat of the Pacific Community transport programme;
- Develop an inter-island transport services strategy to support facilities improvements in Funafuti and outer islands.

B. Recommended actions

At this stage, it seems relevant to recall the recommendations made in the TPF to which the DTIS mission fully subscribes:

1. *The outcomes of the WTO's Bali Ministerial Conference decisions be reviewed in detail and reflected, as appropriate, in Tuvalu Customs Revenue and Border protection (TCRBP) rules and procedures and in Tuvalu's negotiating positions in trade negotiations;*

2. *The TCRBP and CSD intensify their collaboration both generally and in the introduction of PC Trade 12 in order to produce accurate, up-to-date trade statistics as well as their collaboration with other stakeholders as appropriate;*
3. *The TCRBP proactively continue to seek capacity-building assistance from the OCO and other organisations as appropriate, proposing that, where appropriate, the assistance be provided in Tuvalu;*
4. *Consideration be given to corporatising harbour operations as a means to enhancing efficiency of port operations and lower shipping costs both domestic and international;*
5. *An overall review of the country's domestic transportation requirements, both sea and air, be undertaken with a view to examining possible ways of improving transport linkages between the various islands of Tuvalu;*
6. *Services be sought of an international aviation expert to provide advice and assistance on the best way forward for Tuvalu's aviation sector, including how competition might be introduced in the provision of international air services between Tuvalu and other countries or at least arrangements introduced that would lower the cost of air travel.*

C. Priority activities

Identified by the DTIS mission during its survey in Funafuti could supplement or support the ones recommended in the TPF. These actions are described below with some details on required time and resources, technical assistance, capacity building, regulatory reform, implementing agencies for the activity. They are ordered according to their proposed sequence in time.

Proposed actions to be started at short-term (12 months)

1. ***International maritime transport:*** with the assistance of the SPC Transport programme:
   a. Purpose: review current freight rates charged for the Suva-Funafuti leg to determine possible deviation from the spirit governing the creation and operation of the CPSC
   b. Duration: the assistance of the SPC would be needed for an estimated duration of no more than 6 months
   c. Funding: the activity should be co-financed on equal basis share by Tuvaluan traders and shipping lines registered as part of the CPSC.
   d. Institutional requirements: this activity would require no change in legislation nor capacity building, but would need full cooperation of port authorities in Suva and Funafuti, shipping lines, traders, and Customs authorities in Tuvalu.
   e. Implementing agency: SPC Transport programme.
   f. The Annual General Meeting of the CPSC should be entrusted with the decision. Drafting and approval of the terms of references for such a survey. The AGM CPSC would receive and approve the final report and its conclusions and recommendations.

2. ***Air Services Agreement with Fiji:*** request the assistance of the ICAO to resume and finalize the negotiation with Fijian authorities to amend the existing agreement.
   a. Purpose: amend the existing agreement in order to 1) approve one or more Tuvalu designated airline(s) 2) approve other designated airports in Fiji and Tuvalu as appropriate 3) authorise air freight transport services, and 4) envisage services to third countries.
   b. Duration: the assistance of the ICAO would be initially needed for an estimated duration of less than 12 months.
   c. Funding: the activity should be financed by Tuvaluan Ministry of Transport and communication under the responsibility of the Civil Aviation Directorate.
   d. Institutional requirements: this activity would require no change in national legislation. It would need cooperation of airport, immigration, health and Customs authorities in Tuvalu.
   e. Implementing agency: Ministry of Transport Civil Aviation Directorate.

3. ***Port operations improvement:*** ensure full implementation of DTIS 2010 recommended action 3.8 and TPF recommended action 4 and provide the Port of Funafuti with required cargo handling equipment.
   a. Purpose: modernize the operation of the port ensuring provision of appropriate training for port personnel and appropriate handling equipment.
   b. Duration: the Marine and Ports directorate may require the assistance of the SPC and ILO to design training programmes for an estimated duration of less than 12 months.
   c. Funding: the activity should be financed by development partners.
   d. Institutional requirements: this activity would require no immediate change in national legislation, unless a change in operational model is decided. It would need cooperation of port, immigration, health and Customs authorities in Funafuti.
   e. Implementing agency: Ministry of Transport of Transport and communication under the responsibility of the Marine and Ports Directorate.

Proposed actions to be started at medium-term (12 – 36 months)

4. ***Trade facilitation:*** ensure full implementation of DTIS 2010 recommended action 3.5 and examine the need to include a full fledge Customs centric single window system based on ASYCUDA World operating within a regional network.
   a. Purpose: Allow Tuvalu to prepare for a significant increase of trade volumes and passenger traffic in Funafuti and outer islands.
   b. Duration: 18 months over the next 24-36 months
   c. Funding: the activity should be financed by development partners and co-financed by traders in Funafuti and outer island communities to ensure stronger ownership.
   d. Institutional requirements: this activity would require no change in legislation nor capacity building, but would need full cooperation of port authorities in and all relevant players in Tuvalu, including shipping lines, traders, and Customs, immigration health and tourism authorities.
   e. Implementing agency: Ministry of Environment, Foreign Affairs, Labour, and Trade and Ministry of Finance and Economic Planning

5. ***Inter-island cargo consolidation and freight forwarding services:*** Allow cargo from different shippers in Funafuti consigned to different recipients in a given island to be grouped in protecting unit boxes to improve the security of the cargo both in terms of pilferage and damages in handling and storage operations as well as during transport.
   a. Purpose: Allow safer and more reliable exchanges of goods between Funafuti and outer islands.
   b. Duration: 18 months over the next 24-36 months
   c. Funding: the activity should be co-financed by island communities and traders in Funafuti.
   d. Institutional requirements: this activity would require no change in legislation nor capacity building, but would need full cooperation of port authorities in and all relevant players in Tuvalu, including shipping lines, traders, and Customs, immigration health and tourism authorities.
   e. Implementing agency: Primarily main traders in Funafuti with the support of the Ministry of Environment, Foreign Affairs, Labour, and Trade and Ministry of Finance and Economic Planning.

6. ***Inter-island cargo shipping services:*** These services could be community-based private/public services and would be free to service the routes of their choice.
   a. Purpose: Allow private ships to access inter-island services and existing and future terminals in Funafuti and outer islands.

b. Duration: 18 months in the next 36 months
c. Funding: the activity should be co-financed by island communities and traders.
d. Institutional requirements: this activity would require no change in legislation nor capacity building, but would need full cooperation of port authorities in Suva and Funafuti, shipping lines, traders, and Customs authorities in Tuvalu.
e. Implementing agency: Ministry of Environment, Foreign Affairs, Labour, and Trade and Ministry of Finance and Economic Planning - The communities on Funafuti and the seven outer islands through island councils (Kaupule, as executive arm of the Falekaupule) should be entrusted with the drafting and approval of the terms of references for the activity.

The implementation of the above proposed priority activities 3, 4, 5 and 6 are subsequently respectively framed in the attached priority project profiles for submission to development partners including donors and international or regional technical assistance agencies. Activities 5 and 6 have been gathered in a single project profile owing to their complementary nature.

PILLAR 2: SECTORAL TRADE AND EMERGING ISSUES

Chapter 4: Linkage between Trade and Climate Change

A. Context and justification

Tuvalu, a Polynesian island nation is located in the South Pacific Ocean, at 4,000 kilometers northeast of Australian coasts and midway between Hawaii and Australia. It comprises nine separate islands. Tuvalu's archipelago consists of three reef islands and six true atolls and more than 100 islets, spread out between the latitude of 5° to 10° south and longitude of 176° to 180°, west of the International Date Line. Tuvalu is one of the world's smallest independent nations (the fourth smallest country in the world), with a total land area of 26 square kilometers dispersed over 0.9 million square kilometers of Exclusive Economic Zones in the central Pacific Ocean. Tuvalu's population of nearly 11 000 is unevenly distributed among the nine atolls and islands, with Funafuti, the capital, home to over 6000 people (Tuvalu Census, 2012).

Small Island Developing States (SIDS) are highly vulnerable to climate change and sea level rise owing partly to their small land masses surrounded by ocean, and their location in regions prone to natural disasters. But, today, perhaps because Tuvalu is one of the most vocal country in the world at the international arena for a solution to the global issue of climate change, this archipelago is broadly considered to be one of the island countries most threatened by current and future sea level rise.[26] .

Indeed global warming is a concern in Tuvalu since the average height of the islands is less than two metres above sea level, with the highest elevation at 4.6 metres above sea level on Niulakita island, which gives Tuvalu the second-lowest maximum elevation of any country (after the Maldives). For this reason, Tuvalu could be one of the first nations to experience the effects of sea level rise and all its consequences, such as coastal erosion, flooding, saltwater intrusion and increasing vector and water borne diseases, etc. Global warming is accompanied by an increase in extreme events as tropical cyclones or storm surges, and in the years to come all coastal infrastructures such as harbours, residential houses, shops, clinics and dispensaries and also the food crops, trees, will be more and more exposed to the destructive forces of extreme events. Tuvalu will also be particularly affected by drought events with severe water shortages, as during the severe drought afflicted the country in 2011.

This vulnerability is exacerbated by the socio-economic situation of the country. The United Nations classifies Tuvalu as a Least Developed Country (LDC) indicating that the country is low income with structural impediments to sustainable development. This situation is the result of many factors such as, a relatively large population for the area occupied with high growth rates and very high densities on the islands and atolls; a limited natural resource base; limited human resources; limited economic resources, with poorly developed infrastructure and a small domestic market with little potential for economies of scale, not counting isolation from international markets. As a result, the country is extremely vulnerable to external forces, such as changing terms of trade, trade liberalization, and migration, be it inter-island migration or international migration which affects more and more the country. The effects of climate change since many years now, are also a source of perturbations and transformations on the natural environment and on the daily life of the inhabitants of Tuvalu with important socio-economics effects. These extremely high levels of vulnerability are likely to have severe long term effects on development and an adaptive capacity to climate change which is generally low.

In front of this situation, the government of Tuvalu has responded since many years. At the international level, one of the first step forward in terms of commitment to addressing climate change and related

[26] Church et al. 2006; Webb 2006; Mimura et al. 2007; Wong 2011

issues was the ratification of the International Environmental Treaty negotiated at the Earth Summit in Rio de Janeiro in June 1992: the United Nations Framework Convention on Climate Change (UNFCCC). The main objective of the UNFCCC is to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system"[27]. Tuvalu is also a party to many other United Nations conventions, such as the Kyoto Protocol, the United Nations Convention on the Law of the Sea (UNCLOS), Montreal Protocol on Substances that Deplete the Ozone Layer, Convention on Biological Diversity, the Cartagena Protocol for Biosafety, etc. At the national level, The Government of Tuvalu is dedicated to building Tuvalu's capacity at all levels to adapt to climate change. For example, the Tuvaluan government with the UNCC, has adopted a national plan of action namely, the National Adaptation Programmes of Action (NAPAs), which helps Least Developed Countries (LDCs) identify priority activities that respond to their immediate needs so as to adapt to climate change, ultimately leading to the implementation of projects aimed at reducing the economic and social costs of climate change. The programme started in 2007 with NAPA I. The primary aim of NAPA I was to initially focus on the adaptation needs in the agriculture and fisheries sectors for food security, water sector for water security and land sector for coastal protection. At present, the NAPA II objectives are focused around three components: i)Strengthening of community-based conservation programmes on near-shore marine ecosystems; ii) Strengthening disaster risk management; and iii) Strengthening of a better integration of climate change concerns into strategic national development plan. Another component on human health, planned since NAPA I will be implemented at a later stage.

At present, the increasing frequency of natural disasters due to climate change had led to the loss of human, natural, social, physical and financial capital. In the future, Tuvalu will be even more vulnerable to the adverse impacts of climate change effects such as sea level rise, ocean acidification and more severe extremes events. The three pillars of Tuvaluan culture; land, food and community; will be more and more threatened.

Economic development of the Tuvalu's archipelago has become inseparable from the issue of climate change. It is necessary to identify key constraints of consequences of climate change on economic development and trade and particularly on the major activities such as fisheries, agriculture or tourism which have been identified trade priorities in the Trade Policy Framework adopted in 2015. Therefore the main objectives of this chapter are:

- Present and analyse the latest data and references about the present and future changes due to global warming in Tuvalu region, using the Representative Concentration Pathways (RCPs), the new greenhouse gas concentration (not emissions) trajectories, adopted by the IPCC (Intergovernmental Panel on Climate Change) used in 5th IPCC Report published in 2014, if and when possible, or the latest studies led by the Pacific Climate Change Science Programme (PCCSP), and by the Pacific Community (SPC) about fisheries sector vulnerability analysis;
- Assess the level of threats of climate change and its impacts on the environment in Tuvalu;
- Identify the potential effects of climate change on the trade potential and opportunities;
- Recommend adaptation strategy and link the climate change effects on fauna and flora to livelihoods of the population.

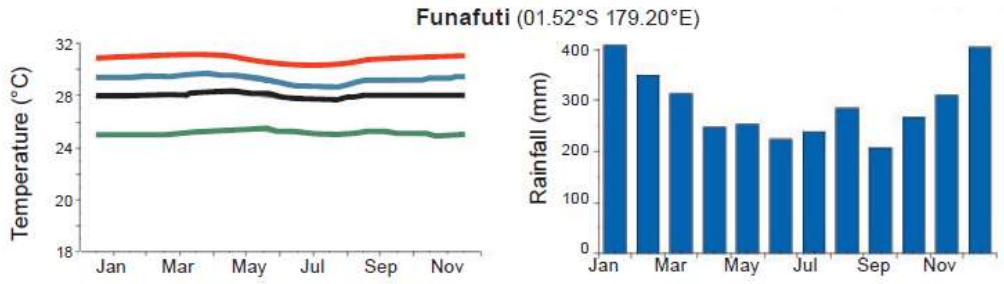
[27] United Nations Framework Convention on Climate Change (UNFCCC), Article 2, 1992

B. Climate change and its impacts on the environment in Tuvalu

B.1. Current climate

Tuvalu has a hot humid tropical maritime climate. Recent air temperatures in Funafuti[28] have averaged 28.2°C with constant temperatures throughout the year (see figure 1). Funafuti usually receives plentiful rainfall during most of the year (average rainfall is > 3660 mm annually); although there is significant seasonal variability in precipitation with two distinct seasons, a wet season from November to April and a dry season from May to October and considerable inter-annual variability due to the El Niño Southern Oscillation (ENSO) phenomenon, a natural climate pattern that occurs across the tropical Pacific Ocean and affects weather. Tuvalu experiences the effects of two extreme phases of ENSO, El Niño and La Niña that flow from changes in ocean temperatures in equatorial and central Pacific. In Funafuti, El Niño events tend to bring wetter, warmer conditions than normal and El Niño effects increase the chances of tropical storms and cyclones; while La Niña events usually bring drier, cooler than normal conditions and La Niña effects increase the chances of drought conditions. Normally, the country receives between 200mm to 400mm of rainfall per month and there are few consecutive days without rain, but there are sometimes long periods (two or more months) of little rainfall. Tuvalu often experiences droughts because of its location near the Pacific equatorial dry zone. Dry periods are more severe in the northern than the southern islands, notably in the months of August to October.

Figure 4. 1: Average seasonal climate for Funafuti station, 1951-1980



(Source: NIWA). Left: monthly average air temperature (black), monthly maximum air temperature (red), monthly minimum air temperature (green) and sea surface temperature (blue). Right: monthly total rainfall. (Source SPC, 2011).

B.2. Extreme weather events

Tropical cyclones, spring tides and droughts are among the main extreme weather events that affect Tuvalu's archipelago. Tuvalu is located south of the equator at the northern extremity of an area known for the frequent occurrence of tropical cyclones. Tropical cyclones affect the country between November and April. As well as high winds and rainfall, tropical cyclones also cause storm surges and swells. The resulting flooding causes important damage to houses, buildings and roads along coast, agricultural losses and also the risk of water born disease as a consequence of contamination of the water supplies. In the 41 year period between 1969 and 2010, 33 tropical cyclones passed within 400 km of Funafuti. During El Niño years tropical cyclones occurred more frequently.

[28] Data are available for Funafuti where the only meteorological station is located. However, the archipelago's average is expected to be close to Funafuti's average.

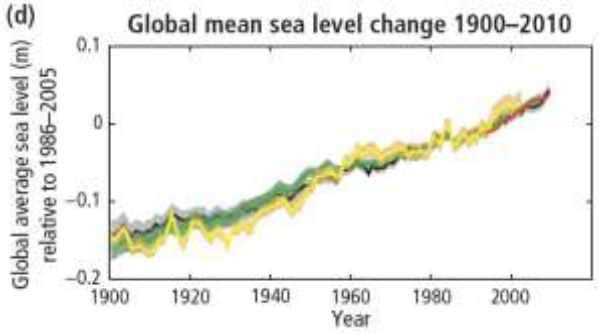
Tuvalu is also affected by perigean spring tide events[29], which raise the sea level higher than a normal high tide. The highest peak tide recorded by the Tuvalu Meteorological Service was 3.4 meters on February 2006 (in Funafuti some families were evacuated due to flooding and it damaged family pulaka pits due to saltwater intrusion) and again on the same month, nine years later in 2015. As a result of historical sea level rise, the king tide events lead to flooding of low-lying areas, which is compounded when sea levels are further raised by La Niña effects or local storms and waves.

More and more often Tuvalu is hit by a prolonged period of dry weather which results in reduced rainfall. During La Niña event, the country is more vulnerable to drought. In 2011, a weak La Niña effect caused a drought by cooling the surface of the sea around Tuvalu. The dry conditions affected the vast majority of pulaka crops, a staple crop for Tuvaluans, and severe water shortages in Funafuti, while rainfall represents the major source of drinking water, which is collected and stored in storage tanks. The state of emergency was declared in September 2011 and the situation was restored with international aid from New-Zealand, Australia, South Korea and Japan.

B.3. Sea level rise projected

Sea level rise (SLR) poses one of the most widely recognized climate change threats to low-lying coastal areas, particularly in small island and atolls, where the majority of human communities and infrastructure is located in coastal zones with limited on-island relocation opportunities[30]. SLR has negative socioeconomic implications on virtually all sectors including tourism, freshwater resources, fisheries and agriculture, human settlements, financial services, and public health. Protection against SLR is likely to be very costly and useless in the long-term. Indeed in the long run, shore protection works will not be able to avoid submergence of the territory. Lack of technology and human resource capacity, serious financial limitations, lack of cultural and social acceptability are some examples of the main constraints to adaptation on small islands. Over the period 1901–2010, global mean sea level rose by 0.19m (0.17 to 0.21) (see figure 2) at a rate between 1.3 and 1.7 mm/ yr^{-1} and since 1993, at a rate between 2.8 and 3.6 $mm/yr^{-1.}$ Acceleration of this trend has been detected in longer records since 1870[31] . Since the mid-19th century the rate of sea level rise has more than doubled than the mean rate during the previous two millennia (high confidence).

Figure 4. 2: Global mean sea level relative to the 1986–2005[32]



Source: IPCC, 2014, p 41

[29] Often called a king tide, is a tide that occurs three or four times a year when the Moon's perigee (its closest point to Earth during its 28-day elliptical orbit) coincides with a spring tide (when the earth, sun and moon are nearly aligned every two weeks).

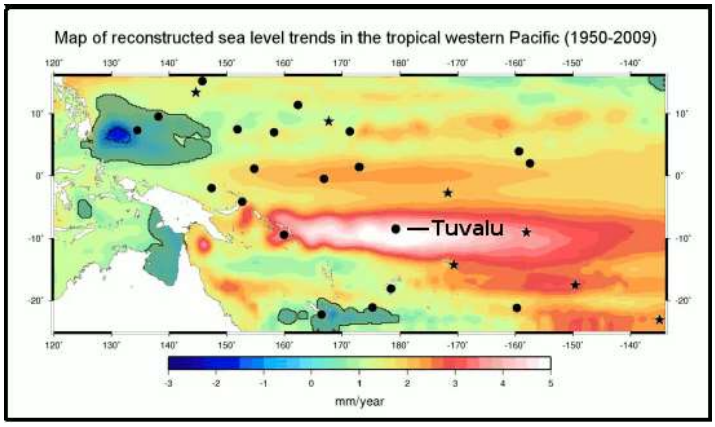
[30] Woodroffe, 2008; Nicholls and Cazenave, 2010; Church and White, 2011

[31] Merrifield et al., 2009; Church and White, 2011

[32] Mean of the longest running data set, and with all data sets aligned to have the same value in 1993, the first year of satellite altimetry data (coloured lines indicating different data sets)

However, rates of sea level rise are not uniform across the globe and it is very likely that in the 21st century and beyond, sea level change will have a strong regional pattern, with some places experiencing significant deviations of local and regional sea level change from the global mean change. Large regional differences have been detected including in the tropical Pacific, where in some parts rates have been significantly higher than the global average[33] . In the tropical western Pacific, where a large number of small island communities exist, and among them Tuvalu, rates of sea level rise up to four times the global average (approximately 12 mm/yr.) have been reported between 1993 and 2009. These are generally thought to describe short-term variations associated with natural cyclic climate phenomena such as El Niño-Southern Oscillation (ENSO), which has a strong modulating effect on sea level variability with lower/higher-than-average sea level during El Niño/La Niña events of the order of ±20 to 30 cm[34]. Rates of relative SLR at Funafuti between 1950 and 2009 (see figure 4.3) have been approximately three times higher than the global average[35], and saline flooding of internal low-lying areas occurs regularly and is expected to become more frequent and extensive over time.[36]

Figure 4. 3: Map of the PIR interannual sea level trends from the reconstruction (1950–2009)



Locations of the 27 tide gauges (black circles and stars) used in this study are superimposed. Stars correspond to the 7 tide gauges used in the global reconstruction. The hatched areas correspond to non-significant trends (p-valueN0.1). (Figure and caption extracted from Becker et al., 2012).

The 5th IPCC report published in 2014, brings new features compared to previous reports of 2007 (Mimura et al. (2007) and 2001 (Nurse et al., 2001). In the case of its fifth Assessment Report (AR5) in 2014 (Moss et al., 2008), the IPCC (Intergovernmental Panel on Climate Change) has adopted four new greenhouse gas concentration (not emissions) trajectories namely the Representative Concentration Pathways (RCPs). Used for Climate Models (CM), the RCPs describe four different 21st century pathways of greenhouse gas (GHG) emissions and atmospheric concentrations, air pollutant emissions and land use. RCPs replace the Special Report on Emissions Scenarios[37] (SRES) projections published in 2000 and employed in two previous reports (2001 and 2007). There are four RCPs[38]: RCP8.5, RCP6,

[33] Meyssignac et al., 2012
[34] Cazenave and Remy, 2011; Becker et al., 2012
[35] Becker et al., 2012
[36] Yamano et al., 2007
[37] The SRES scenarios (A1, A2, B1, B2) used in the IPCC Third Assessment Report (TAR), published in 2001, and in the IPCC Fourth Assessment Report (AR4), published in 2007.
[38] RCP Primary Characteristics:
- RPC 8.5: this RCP is characterized by increasing greenhouse gas emissions over time, representative of scenarios in the literature that lead to high greenhouse gas concentration levels;
- RCP 6: It is a stabilization scenario in which total radiative forcing is stabilized shortly after 2100, without overshoot, by the application of a range of technologies and strategies for reducing greenhouse gas emissions (Fujino et al. 2006; Hijioka et al. 2008);
- RCP 4.5: it is a stabilization scenario in which total radiative forcing is stabilized shortly after 2100, without overshooting the long-run radiative forcing target level (Clarke et al. 2007; Smith and Wigley 2006; Wise et al. 2009);
- RCP2.6: The emission pathway is representative of scenarios in the literature that lead to very low greenhouse gas concentration levels. It is a "peak-and-decline" scenario; its radiative forcing level first reaches a value of around 3.1 W/m2 by mid-century, and returns to 2.6 W/m2 by 2100. In order to reach such radiative forcing levels, greenhouse gas emissions (and indirectly emissions of air pollutants) are reduced substantially, over time (Van Vuuren et al. 2007a).

RCP4.5, and RCP2.6. The numbers refer to radiative forcings (global energy imbalances), measured in watts per square metre, by the year 2100.

Sea level rise could be larger than expected compared to the last projections in IPCC report (2007) which estimated a sea level rise of 20-40 centimeters at the end of the century in the region. Today, across all RCPs scenarios, global mean sea level is projected to rise by 0.26 to 0.82 m by the end of the 21st century (see table 4.1 and figure 4.4).

Table 4. 1: AR5 global mean sea level (m) increase projections

	2046-2065	2081-2100
RCP scenario	Mean and likely range	Mean and likely range
RCP2.6	0.24 (0.17 to 0.32)	0.40 (0.26 to 0.55)
RCP4.5	0.26 (0.19 to 0.33)	0.47 (0.32 to 0.63)
RCP6.0	0.25 (0.18 to 0.32)	0.48 (0.33 to 0.63)
RCP8.5	0.30 (0.22 to 0.38)	0.63 (0.45 to 0.82)

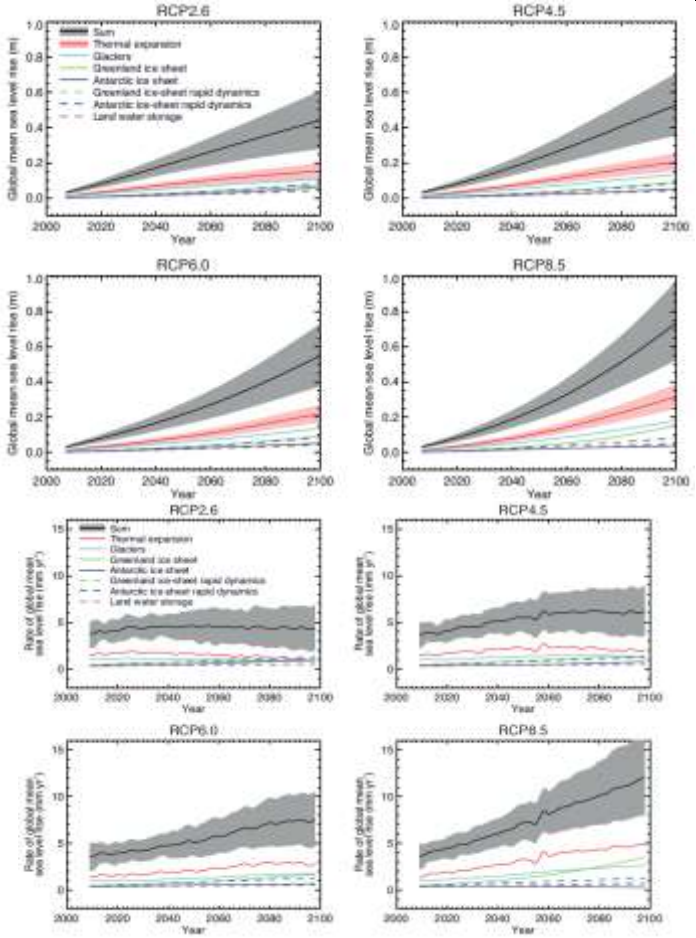


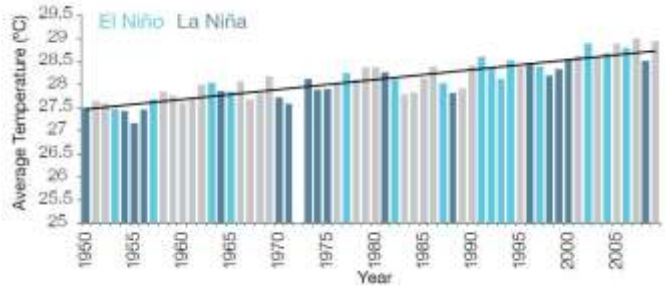
Figure 4. 4: Projections from process-based models of global mean sea level (GMSL) rise relative to 1986–2005 and the rate of GMSL rise and its contributions as a function of time for the four RCP scenarios[39].

B.4.Temperatures, rainfall and extreme weather events projected: Future climate of Tuvalu

4.1. Projected temperatures

[39] The lines show the median projections. For GMSL rise and the thermal expansion contribution, the likely range is shown as a shaded band. The contributions from ice sheets include the contributions from ice-sheet rapid dynamical change, which are also shown separately. (Figure and caption extracted from Church et al., 2013, p 1181)

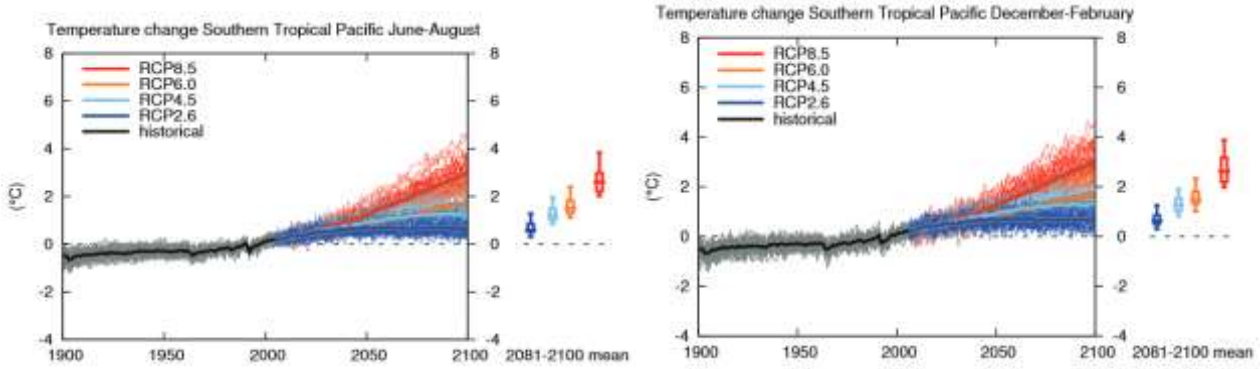
Figure 4. 5: Annual Average temperature for Funafuti



Light blue bars indicate El Nino years and dark blue bars indicate La Nina years and grey bars, neutral years (extracted from Australian Bureau of Meteorology and CSIRO, 2011).

Annual and seasonal maximum and minimum temperature have increased in Funafuti since 1950 (see figure 4.5). Maximum temperatures have increased at a rate of 0.21°C per decade.

Figure 4. 6: Time series of temperature change relative to 1986–2005 averaged over all grid points in the Southern Tropical Pacific (5°S to 5°N, 155°E to 150°W) in June to August and in December to February[40].



Projections for all RCP scenarios indicate that the annual surface air temperatures and sea surface temperatures are projected to continually increase in the future in Tuvalu over the course of the 21st century (very high confidence). However, the temperature projections in this region dominated by oceans seem less than those seen globally (see table 2). Figure 4.6 shows that surface air temperature is projected to increase moderately under RCP 4.5 trajectory, between 1 and 2°C (2081-2100 mean), and twice more under RCP 8.5 trajectory between 2 and 4°C (2081-2100 mean) (see figure X). Extensive climate projections made for Tuvalu, based on downscaling from an ensemble of models (Australian Bureau of Meteorology and CSIRO, 2011b) simulate, under the A2 high emission scenario, a slight increase <1°C (0.4 to 1°c) in annual and seasonal mean temperature by 2030. However by 2090 temperature increases greater than 2.5°C (2.1 up to 3.3°C) are simulated by almost all models. About sea surface temperature a similar rate of warming (or slightly weaker) is projected for the surface ocean (high confidence). About extreme temperatures, the intensity and frequency of extreme heat days (and warm nights) are projected to increase over during the 21st century (very high confidence).

Table 4.2: AR5 global warming increase (°C) projections

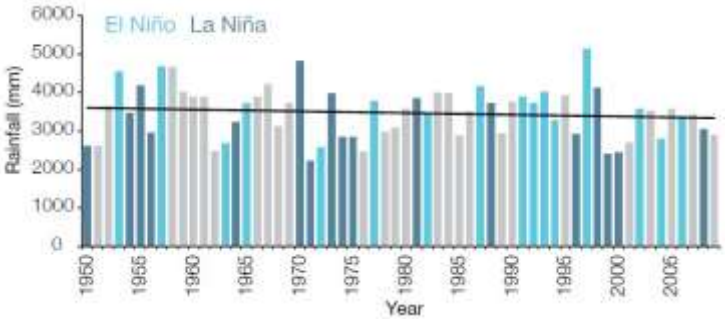
	2046-2065	2081-2100

[40] Thin lines denote one ensemble member per model, thick lines the CMIP5 multi-model mean. On the right-hand side the 5th, 25th, 50th (median), 75th and 95th percentiles of the distribution of 20-year mean changes are given for 2081–2100 in the four RCP scenarios (Figure and caption extracted from IPCC, 2013, p 1386-1387)

RCP scenario	Mean and *likely* range	Mean and *likely* range
RCP2.6	1.0 (0.4 to 1.6)	1.0 (0.3 to 1.7)
RCP4.5	1.4 (0.9 to 2.0)	1.8 (1.1 to 2.6)
RCP6.0	1.3 (0.8 to 1.8)	2.2 (1.4 to 3.1)
RCP8.5	2.0 (1.4 to 2.6)	3.7 (2.6 to 4.8)

4.2. Projected rainfall

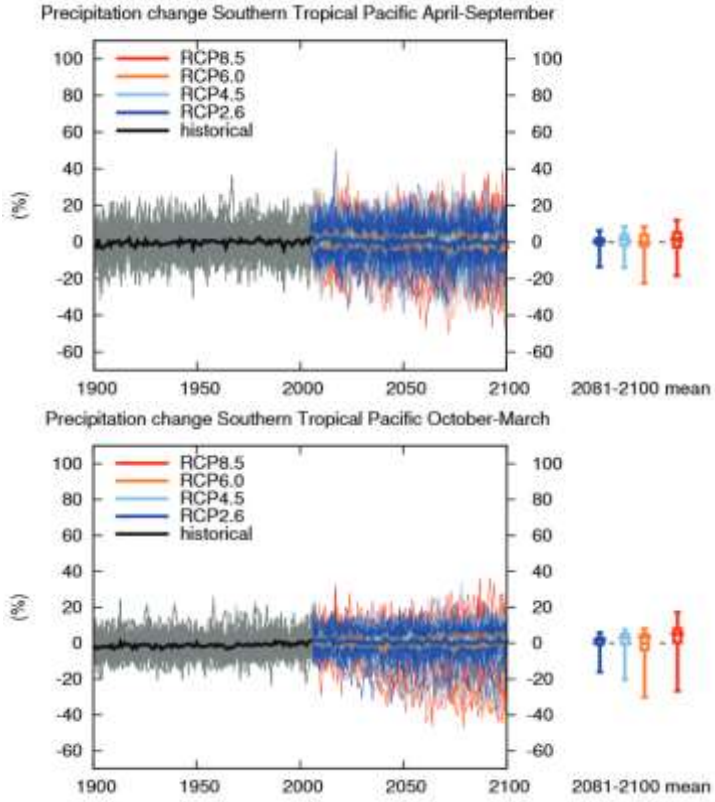
Figure 4.7: Annual rainfall for Funafuti



Light blue bars indicate El Nino years and dark blue bars indicate La Nina years and grey bars, neutral years (extracted from Australian Bureau of Meteorology and CSIRO, 2011).

Since 1950 annual and seasonal precipitations for Funafuti show no clear trends (see figure 4.7). However, variations in rainfall from year to year can be substantial.

Figure 4.8: Time series of relative change relative to 1986–2005 in precipitation averaged over all grid points in the Southern Tropical Pacific (5°S to 5°N, 155°E to 150°W) in April to September and in October to March[41].



[41] Thin lines denote one ensemble member per model, thick lines the CMIP5 multi-model mean. On the right-hand side the 5th, 25th, 50th (median), 75th and 95th percentiles of the distribution of 20-year mean changes are given for 2081–2100 in the four RCP scenarios (Figure and caption extracted from IPCC, 2013, p 1388-1380).

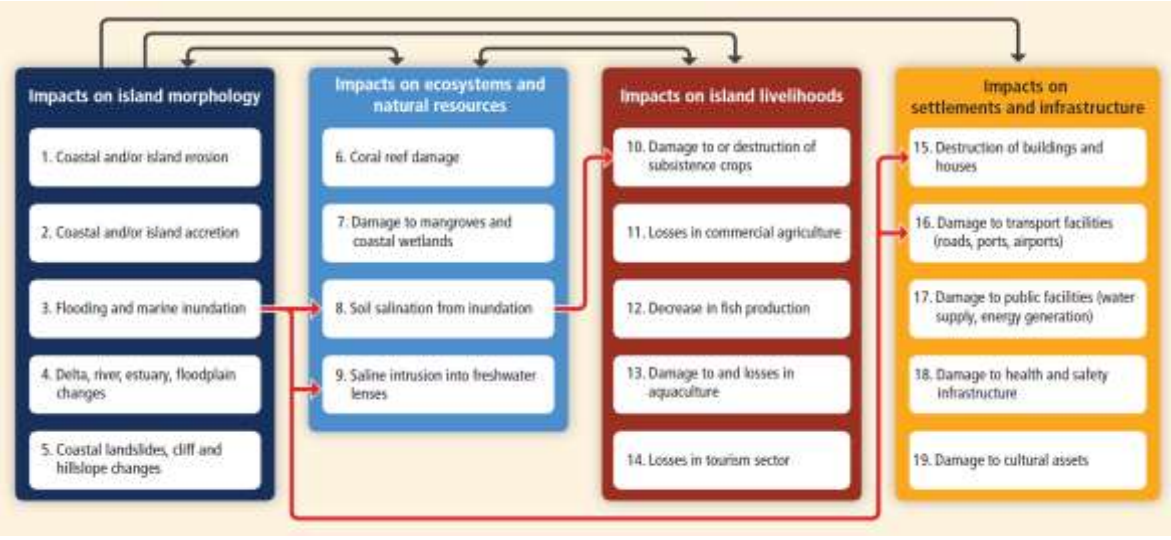
For Southern Tropical Pacific region, projections for all RCP scenarios from GIEC and from the Australian Bureau of Meteorology and CSIRO indicate a very slight increase in rainfall (see figure 4.8). Projections under the A2 high emission scenario simulate change between -5 percent to +5 percent in annual and seasonal mean rainfall by 2030, then increasing (>5 percent) by 2090 for Tuvalu. However, about rainfall, the change expected is the increasing of intensity and frequency of extreme rainfall days (high confidence). Wet season and dry season increases are projected mainly due to the expected intensification of the South Pacific Convergence Zone.

4.3. Projected extreme weather events

Impacts of tropical cyclone are often very important on low lying areas and affect the natural environment and all socio-economic activities (see figure 4.8). These impacts could be: severe erosion of coastal zone, displacement of lands, and loss of islets, the destruction of living houses, cooking houses, sheds, pig-pens, and other properties, losses sources of food supply including pulaka, breadfruits, coconuts, destruction of water storage, damages to infrastructure like roads, ramps, sea walls, damages to telecommunications and electricity service. Sanitation issues and public health issues also have to be taken in account.

In the past, tropical cyclones have caused severe damage to Tuvalu's islands, resulted in evacuation of families, significant material/infrastructural damages to the livelihood foundations of the community. Cyclone Bebe caused severe damages during the 1972–73 South Pacific cyclone season destroying 97 percent of houses of Funafuti. In 1997, Cyclone Keli destroyed 100 percent of houses on Niulakita Island. In February 1990, cyclone Ofa had a major impact on Tuvalu particularly on Vaitupu Island where around 85 percent of residential homes, trees and food crops were destroyed. The last one, TC PAM in March 2015 was devastating: strong winds, intense rainfall, flooding resulting in sea waves, estimated to be from three to five metres in height, caused significant damage to infrastructure and food crops on the islands of Nanumea, Nanumaga, Niutao, Nui, Nukufetau, Nukulaelae and Vaitupu. Coastal erosion was very important and caused significant land losses with some islands reporting as much as 20-50 meters sea encroachments. Water supplies were contaminated by seawater; boulders, coral and other debris were deposited inland and hundreds of people were temporarily displaced. The economic impact of TC Pam is estimated to be well above 25 percent of 2015 projected GDP (43 million AU$).

Figure 4. 9: Tropical cyclone impacts on the coasts of small islands.



Four types of impacts are distinguished here, with black arrows showing the connections between them, based on the existing literature. An example of the chain of impacts associated with tropical cyclone is illustrated by the red arrows. Swell waves

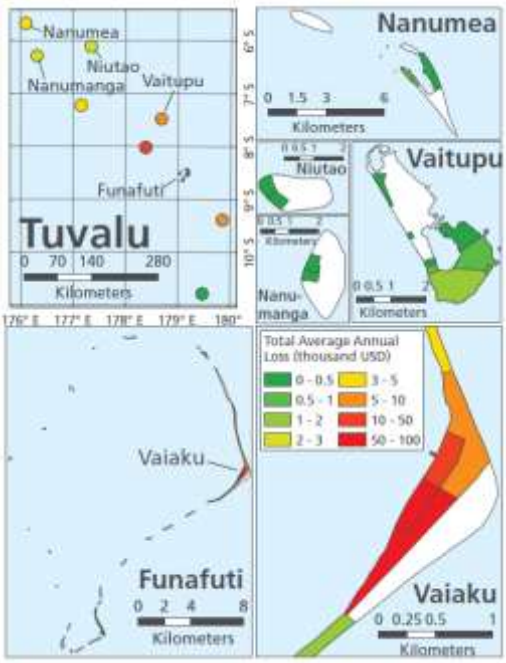
generated by this event caused extensive flooding (3) that impacted soil quality (8) and freshwater resources (9), and damaged crops (10), buildings (15), and transport facilities (16) (Figure and caption extracted from Nurse et al., 2014, p 1632).

The effects of all these tropical cyclone are however a further demonstration of the vulnerability of Tuvalu to climate risks. The largest cyclones that devastated Tuvalu in the last four decades provides a glimpse of what the country will face even more under a changing climate.

Projections over the course of the 21st century of the Australian Bureau of Meteorology and CSIRO indicate that tropical cyclone numbers are projected to decline in the south-east Pacific Ocean basin (0-40°S, 170°E-130°W). Despite this projected reduction in tropical cyclone formation, simulations show an increase in the proportion of the most severe cyclone. It is likely to be an increase in the average maximum wind speed of cyclone by between 2 percent and 11 percent and an increase in rainfall intensity of about 20 percent within 100 km of the cyclone centre[42].

These forecasts of fewer but more intense tropical cyclones are likely to have significant implications on future damages in terms of human lives, infrastructure and livelihood assets as a research indicates that globally 10 percent of intense tropical cyclones are presently responsible for 93 percent of damages.[43]

Figure 4.10: Contribution from the different islands to the average annual loss for tropical Cyclone and earthquake (ground shaking and tsunami).



Source: Pacific catastrophe risk assessment and financing initiative-Tuvalu, 2011.

The Risk Profile of Tuvalu formulated by the Pacific Catastrophe Risk Assessment and Financing Initiative Country Risk Profile: Tuvalu, in 2011 indicates that based on historical data, the country is expected to incur, on average, 0.2 million USD per year in losses due to earthquakes and tropical cyclones. In the next 50 years (100-year mean return period), Tuvalu has a 50 percent chance of experiencing a loss exceeding 4 million USD and casualties larger than 15 people, and a 10 percent chance of experiencing a loss exceeding 9 million USD and casualties larger than 50 people.

[42] Australian Bureau of Meteorology, 2011
[43] Mendelsohn et al., 2012

C. Fisheries and climate change

C. 1. Fisheries issues

With limited land area for agriculture, poor soil, no surface freshwater or non-saline groundwater, Tuvalu's ability to rely on its land resources is very limited (Knapman et al., 2001). In fact, Tuvalu's only significant economic resources are its marine resources. The Western and Central Pacific Ocean is the most productive fishing area in the world. The major target species in this area are albacore (*Thunnus alalunga*), bigeye tuna (*Thunnus obesus*), skipjack (*Katsuwonus pelamis*) and yellowfin tuna (*Thunnus albacares*). The tuna catch for 2010 in this area represented 83 percent (2,421,113 tons) of the total Pacific Ocean catch and 60 percent of the global tuna catch (Harley et al., 2011).

With 0.9 million square kilometres of Exclusive Economic Zone (EEZ), Tuvalu has significant potential fishery resources. Recent annual average catches (2004–2008) by the local fishery for tuna were around 16 tonnes per year within its EEZ, worth > US$ 36,000[44]. The main commercial benefit from this marine resource is from tuna fishing licences issued to foreign vessels. These fleets made average annual catches in the surface fishery of 26,380 tonnes between 1999 and 2008[45] . Revenues from fishing license fees contributed significantly to Tuvalu's gross domestic products (GDPs), such as most of Pacific Island Countries. In 2014, fisheries resources based on licensing fees has represented US$ 17 million of income. Fishing access fees are the first source of national income providing 45 percent of 2015 budget revenue.

The inshore fishing, of Tuvalu is made up mainly of three components: demersal fish (bottom-dwelling fish associated with coral reef, mangrove and seagrass habitats), nearshore pelagic fish (including rainbow runner, tuna, mahi-mahi and wahoo), and invertebrates gleaned from intertidal and subtidal areas.[46] The inshore fishing is also important in terms of economic income. The total annual catch was estimated to be 1215 tonnes in 2007, worth > US$ 2.8 million. The commercial catch was 226 tonnes (see figure 6.11). Demersal fish are estimated to make up 70 percent of the total catch. The coastal fishing, predominantly artisanal and subsistence-based, uses outboard-powered small craft and traditional canoes.

Figure 4. 11: Coastal fisheries

Feature	Coastal fisheries category				Total	Total value (USD m)*
	Demersal fish	Nearshore pelagic fish[b]	Targeted invertebrates	Inter/subtidal invertebrates		
Catch (tonnes)*	837	326	0	52	1215	2.8
Contribution (%)[a]	69	27	0	4	100	

* Estimated total catch and value in 2007 (Gillett 2009)[1]; a = method for calculating disaggregated catch data for each category is outlined in Chapter 9 (Appendix 9.2, Supplementary Table 9.1); b = catch comprised equally of tuna and non-tuna species.

Source: Bell. et al, 2011, p 255.

The coastal and near-shore (reef and lagoon) fisheries, is mostly a vital source of protein for the population. This fishery plays a significant role in providing food security, welfare and livelihood (important for women's livelihoods) diversification (such as handicraft production) and Tuvalu's culture (links with the ocean are a dominant component). This is especially true for Tuvalu whose land mass is very limited, thereby limiting agricultural production and land-based livelihood options.

[44] Bell et al., 2011
[45] Ibid
[46] Pratchell et al., 2011

Subsistence fishing is an important aspect of Tuvaluan life, including at Funafuti where a part of population can work in the tertiary sector. In fact, for 90 percent of households in the country, the subsistence harvesting of marine resources is an essential part of their food source. A study administered by the South Pacific Community organization and SPAC in 2004-2005 estimates that fish provides more than 75 percent of dietary animal protein in Tuvalu, well above the regional average. This report highlights than the national average consumption of fish is nearly 98.4kg/capita/year and some outer islands had average consumption most important, of over 150kg of fish. Compared to the regional average of less than 50kg/capita/year, it is clear than marine resources are an important source of livelihoods and source of protein for Tuvaluans. To supplement their diet, most Tuvaluan households engage in household-level fishing (near-shore fishing is the main source of fish catch) and collection activity of marine resources especially shellfish and invertebrates. People living on outer islands are more heavily dependent on subsistence fishing and farming for their livelihoods. On these islands 99 percent of households consume home produce (from fishing, cropping and livestock) compared with 74 percent in Funafuti. Fishing is the second most important source of subsistence income after agriculture.

C. 2. Impacts of climate change on fisheries and aquaculture

The effects of climate change on the availability and use of marine resources in the course of the 21st century affect differently the ocean environment and the coastal environment, with opportunities or threats to increase or decrease the substantial contributions that fisheries make to food security and livelihoods, and to government revenue. These outlines about the consequences of global warming and ocean acidification, expected to affect oceanic fisheries, coastal fisheries and aquaculture in Tuvalu are based on a study of potential climate changes in Tuvalu recently undertaken by the Pacific Climate Change Science Programme (PCCSP), with the support of the Australian Government in collaboration with the regional meteorological services including the Tuvalu Meteorological Service and on the recent fisheries sector vulnerability analysis, led by the Pacific Community (SPC), with the support of the Tuvalu Department of Fisheries.[47] These studies predict significant changes to Tuvaluan waters, such as sea level rise, increase in sea surface temperature, and increase in ocean acidification and changes to ocean currents, such as the South Equatorial Current, and the area and location of the Pacific Equatorial Divergence (PEQD) Province.[48] (See figure 4.12).

[47] http://www.spc.int/climate-change/fisheries/assessment/
[48] Bell et al., 2011

Figure 4.12: A summary of projected changes to the surface climate (mean annual air temperature, rainfall, and cyclonicity) for the years 2035 and 2100 using IPCC B1 (low) and A2 (high) emission scenarios

Climate feature*	1980–1999 average	Projected change B1 2035	A2 2035	B1 2100*	A2 2100
Air temperature (°C)	28.2 (Funafuti)	+0.5 to +1.0	+0.5 to +1.0	+1.0 to +1.5	+2.5 to +3.0
Rainfall (mm)	3666 (Funafuti)	+5 to +15%	+5 to +20%	+10 to +20%	+10 to +20%
		More extreme wet and dry periods			
Cyclones (no. per year)	0.8	➢ Total number of tropical cyclones may decrease ➢ Cyclones are likely to be more intense			

* Approximates A2 in 2050; a = for more detailed projections of rainfall, air temperature a cyclones in the vicinity of Tuvalu, see www.cawcr.gov.au/projects/PCCSP.

Ocean feature	1980–1999 average	Projected change B1 2035	A2 2035	B1 2100*	A2 2100
Sea surface temperature (°C)	29.4*	+0.6 to +0.8	+0.7 to +0.8	+1.2 to +1.6	+2.2 to +2.7
Sea level (cm)	+6 since 1960				
IPCC **		+8	+8	+18 to +38	+23 to +51
Empirical models ***		+20 to +30	+20 to +30	+70 to +110	+90 to +140
Ocean pH (units)	8.08	-0.1	-0.1	-0.2	-0.3
Currents	Increase in South Pacific gyre	SEC decreases at equator; EUC becomes shallower; SECC decreases and retracts westward			
Nutrient supply	Decreased slightly	Decrease due to increased stratification and shallower mixed layer			< -20%

* Approximates A2 in 2050; ** projections from the IPCC-AR4; *** projections from recent empirical models (Chapter 3, Section 3.3.8); a = average for EEZ derived from the HadISST dataset; SEC = South Equatorial Current; EUC = Equatorial Undercurrent; SECC = South Equatorial Counter Current.

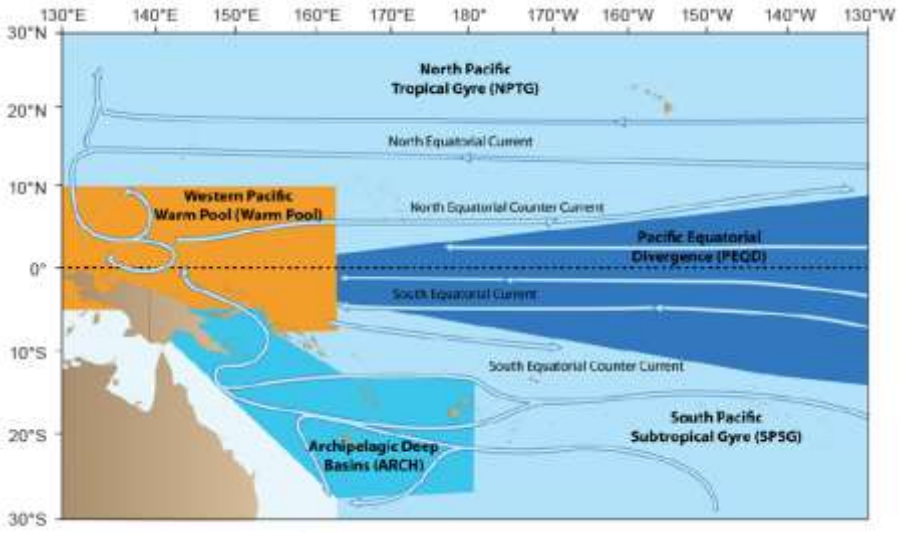
The green and blue boxes illustrate the level of Likelihood and Confidence, based on IPCC terminology. (Extracted from Bell. et al., 2011, p 252-253).

2.1. Oceanic fisheries

About the existing oceanic fish habitat, the Pacific Equatorial Divergence Province[49] (see figure 4.13), where is located Tuvalu's archipelago, is actually an ecological province of the tropical Pacific Ocean characterised by nutrient-rich waters, high-salinity, and an abundance of phytoplankton[50] (Le Borgne et al., 2011). However, primary production in this province is limited by low iron concentrations.[51] The convergence of Pacific Equatorial Divergence Province and the Western Pacific Warm Pool[52] creates prime feeding areas for tuna. Thus, changes in the position of this convergence zone due to the El Niño-Southern Oscillation have a major influence on the abundance of tuna in the Exclusive Economic Zone of Tuvalu.[53]

[49] The Pacific Equatorial Divergence Province is generated by the effects of the earth's rotation on the South Equatorial Current, which results in significant upwelling of nutrients. These conditions create the richest surface waters in the region.
[50] Le Borgne et al., 2011
[51] Ibid
[52] The Western Hemisphere Warm Pool (WHWP) is a region of sea surface temperatures (SST) warmer than 28.5°C that develops west of Central America in the spring, then expands to the tropical waters to the east.
[53] Lehodey P et al, 2011

Figure 4.13: The five ecological provinces of the tropical Pacific Ocean defined by Longhurst (2006).



Under climate change the oceanic fish habitat will be modified. The surface area of the Pacific Equatorial Divergence Province is projected to contract and the convergence zone with the Warm Pool is expected to move eastward. However, there are likely to be only minor changes in the key components of the food web for tuna (e.g. net primary production and zooplankton biomass) in Pacific Equatorial Divergence Province (Le Borgne et al., 2011).

Projected changes in oceanic fisheries production

In terms of fisheries production, catches of skipjack and yellowfin tuna in Tuvalu's Exclusive Economic Zone are projected to increase (by up to 35-40 percent in the case of skipjack tuna) over the coming decades due to changes in sea surface temperature and the location of the prime feeding areas for these species at the convergence of the Warm Pool and the western edge of the Pacific Equatorial Upwelling. On the other hand, catches of bigeye tuna are eventually expected to decrease. To anticipate this decrease, conservation management measures for bigeye tuna will be necessary in the short run. Greater abundances of skipjack and yellowfin tuna within its EEZ should provide Tuvalu with opportunities to increase the contributions of licences fees from distant water fishing nations to government revenue, and create other opportunities for local enterprises. By doing so, Tuvalu will maximize access to oceanic fisheries for greater socio-economic development.

2.2. Coastal fisheries

Tuvalu has 3,175 square kilometers of coral reef to support coastal fisheries species and coastal fish habitat. The mangrove ecosystem covers a small area (0.4 km²) and there is a little or no seagrass habitat in Tuvalu. The area of intertidal sand flats within lagoons is not known. Today, the coastal environment is one of the most affected by human pressure particularly in Funafuti's atoll (2,510 inhabitants/km², census 2012) and increasing population (25.5 percent increase in ten years between 2002 and 2012), which are direct threats to coral reefs, mangroves, and intertidal flats. With climate change, threats will accelerate and become more important, resulting in declines in the quality and area of all habitats (see figure 4.14). Climate change would have significant adverse effects on marine ecosystem's viability, marine species diversity and distribution and the coastal fish habitat.

Figure 4.14: projected changes to coastal fish habitat

Habitat feature*	Projected change (%)		
	B1/A2 2035	B1 2100*	A2 2100
Coral cover[b]	-25 to -65	-50 to -75	> -90
Mangrove area[c]	-10	-30	-60

* Approximates A2 in 2050; a = no estimates in reduction of intertidal flats available; b = assumes there is strong management of coral reefs; c = indicative estimates from Samoa [Chapter 6].

Source: Bell. et al, 2011, p. 255

Scientific studies indicate that the sea surface temperature of Tuvalu is in present time near 29°C, with a seasonal variation of +/-0.5°C. This temperature is at the upper limit of the tolerance range for most coral species (25°C to 29°C) and for most marine life. Future increases in the sea surface temperature due to climate change and, variability and acidification from increased levels of carbon dioxide[54], will result in coral bleaching and extirpation of some marine species. The coral bleaching episode attributed to the increase in water temperature which occurred during the El Niños -Southern Oscillation that occurred from 1998-2000 and from 2000-2001[55], experienced by the reefs at Funafuti which have suffered damage, with 80 per cent of the coral been bleached, is an symptom of future decrease of productivity of marine resources.

In addition to the increasing sea surface temperature and ocean acidification, coral reefs and marine ecosystems in Tuvalu would also have to cope with the sea level rise. The rate of sea level rise is expected to be higher than the rate of coral growth. At this time, scientific studies do not provide enough evidence on whether the coral reefs are able to adapt to the sea level rise or if they will disappear. Marine habitats, especially in shallow areas (species diversity is higher in shallower water than at depth[56]), will be more affected and destroyed by the increasing intensity of tropical cyclones in the central Pacific Ocean. For the same reason, human and material losses will be more important. For all these reasons, and in addition to overfishing, most recently available scientific projections indicate a future decrease of productivity of marine resources for the coastal environment.

Projected changes in coastal fisheries production

The SPC analysis clearly demonstrates than the productivity for coral reef fish is projected to decline in Tuvalu[57] due to both direct effects of climate change (e.g. the impact of increased sea surface temperature on recruitment and reproduction of reef fish) and the indirect effects of climate change (particularly the degradation of coral reef fish habitats due to higher sea surface temperature, ocean acidification and more intense tropical cyclone). The consequence is that fisheries for demersal fish and intertidal and subtidal invertebrates are projected to show progressive declines in productivity. This decline will be for demersal fish by 2 to 5 percent by 2035 (using IPCC B1 (low) and A2 (high) emission scenarios) and by 20 percent in 2050 (using A2 scenario) to 50 percent at the end of the century (A2 scenario). For intertidal and subtidal invertebrates, the decline will be by 5 percent by 2050 (A2 scenario) to 10 percent in 2100 (see figure 4.14).

On the contrary, the near-shore pelagic fish component of coastal fisheries, based on skipjack and yellowfin tuna, is projected to increase in productivity due to the redistribution of tuna to the East, as reasons outlined above[58]. Increasing will be by 15 to 20 percent by 2035 (using IPCC B1 (low) and A2 (high) emission scenarios) and by 20 percent in 2050 (using A2 scenario) (see figure 4.15).

[54] Govan H. et al, 2007
[55] Whitty J., 2003
[56] Buckley, 1983
[57] Bell et al., 2011
[58] Lehodey P et al, 2011

Figure 4.15: Projected changes in coastal fisheries production

Coastal fisheries category	Projected change (%)			Main effects
	B1/A2 2035	B1 2100*	A2 2100	
Demersal fish	-2 to -5	-20	-20 to -50	Habitat loss and reduced recruitment (due to increasing SST and reduced currents)
Nearshore pelagic fish[a]	+15 to +20	+20	+10	Changes in distribution of tuna
Inter/subtidal invertebrates	0	-5	-10	Declines in aragonite saturation due to ocean acidification

* Approximates A2 in 2050; a = tuna comprise ~ 50% of the nearshore pelagic fishery [Chapter 9, Tables 9.8 and 9.10].

Source: Bell. et al, 2011, p. 256

The conclusions of SPC's data analysis indicate that the overall projected change to coastal fisheries catch, will be balanced between the projected decrease in productivity of demersal fish and the projected increase in productivity of near-shore pelagic fish. As a result, total catches from coastal fisheries in Tuvalu are projected to increase slightly (2 percent more) under B1 and A2 IPCC scenarios in 2035, but to decline by 9 percent under B1 scenario in 2100, and by more than 20 percent under A2 scenario in 2100 (see figure 6.16). However, two others parameters must also to be taken into account. The first one is population growth in Tuvalu that will affect the potential supply of reef fish per person and the second is the possible increased incidence of ciguatera fish poisoning that could reduce the availability of reef fish in some islands even further.

Figure 4.16: Projected changes in coastal fisheries productivity

Coastal fisheries category	Contrib. (%)**	Projected change in productivity (P) and catch (%)					
		B1/A2 2035		B1 2100*		A2 2100	
		P***	Catch	P***	Catch	P***	Catch
Demersal fish	69	-3.5	-2	-20	-14	-35	-24
Nearshore pelagic fish	27	+17.5	+5	+20	+5	+10	+3
Inter/subtidal invertebrates	4	0	0	-5	-0.2	-10	-0.4
Total catch[a]			**+2**		**-9**		**-22**

* Approximates A2 in 2050; ** contribution of each component to total coastal fisheries catch in Tuvalu; *** median projected change in productivity based on range in Chapter 9; a = assumes that proportion of each category remains constant.

Source: Bell. et al, 2011, p. 256

2.3. Aquaculture

With the climate change, during the 21st century, air temperature and rainfall will increase (between 2.5 and 3°C more in 2100 than present temperature in the case of A2 IPCC scenario; increasing of annual rainfall will be by 10 to 20 percent by 2100 (using IPCC B1 and A2 scenarios).

The aquaculture of milkfish has recently been introduced (it was not traditionally practiced) in Tuvalu. The future conditions under climate change, with higher water temperatures, increased rainfall and higher air temperatures are expected to enhance and favour the conditions for growing of wild juvenile milkfish in lagoons and ponds. Sea level rise may also increase the number of sites suitable for collecting milkfish fry in some islands (e.g. Vaitupu). However, ocean acidification and higher water temperatures may eventually reduce the efficiency of culturing giant clams but such effects should not preclude assessment of the possible benefits of developing giant clam farming over the next couple of decades. Increasing rainfall, probably will favour communities particularly on northern islands to install hydroponic systems to grow vegetables and freshwater fish (Nile tilapia) (see figure 4.17).

Figure 4.17: Projected changes in aquaculture production

Source: Bell. et al, 2011, p. 257

C. 3. Recommendations on fisheries development in context of climate change

While the total catch may increase in short-term, change in fisheries will mainly concern coastal fisheries production and implies significant reallocations of coastal marine resources from reef and coastal intertidal, sub-tidal or demersal fisheries to near-shore pelagic fisheries as seen above. In this context, one of the key issues is an optimal management of coastal fish habitats and fish stocks to ensure that they continue to supply fish for food security of Tuvaluan population. Fisheries development should be closely monitored and focus turned to improved management.

Against decline of coastal fisheries production and due to degradation of coastal fish habitat, development of marine conservation/protected areas (MPA), such as the Funafuti Conservation Area since 1999, could be a mitigation strategy to preserve and protect fisheries resources of Tuvalu. Marine protected area can be an effective tool to maintain fish populations and conserve coral reef ecosystems. The general concept is to create overpopulation within the MPA. The fish expand into the surrounding areas reducing crowding while increasing the population of unprotected areas. A marine reserve with maximum protection, where all resource removals are strictly prohibited, as "no take zones" is the most effective form of protection.

Another important fish habitat is mangrove ecosystem which is also affected by climate change events, such as sea level rise that could affect growth and productivity or tropical cyclones with associated heavy rain that can cause pollution thereby affecting breeding and spawning grounds for many fish species that live in these areas. Mangroves are productive ecosystems that are important to the livelihoods of coastal communities of Tuvalu. They enhance local fisheries, provide material for handicrafts and firewood, but also play an essential role in protecting the coast against flooding and storms. For these reasons, investing in mangrove rehabilitation such as the projects led in the main village area on Nanumea and at Funafala islet, generate both mitigation and adaptation benefits: the restoration of mangrove forests can protect shorelines from erosion and provide breeding grounds for fish.

It is also important to remember that marine resources, both near-shore and in lagoons are declining due not only to climate change but mainly by overfishing and destruction of marine habitats, considered to be one of the key contributing factors to the declining viability of the marine resource-based economy. In fact, with Tuvalu economic growth, more and more fishers have access to powered boats, allowing them to expand their fishing zone very far. With increasing of fuel prices in recent years, those fishers need to catch larger volume of fish in order to cover the fuel costs. In the near future, the rising population will result in increased demand for fish stocks already under stress due combined factors of anthropogenic pressures and more recently climate change. Thus in order to reduce these factors, potential responses could be to: i) modify fishing efforts and allowable catches according to the state of the stock, ii) promote and enforce sustainable coastal management practices, using for example traditional fishing methods with traditional boats, and iii)promote alternative sources of protein for communities during low productivity periods.

D. Tourism and climate change

D.1. Tourism issues

Tourism in Tuvalu is a very small sector and underdeveloped. At the time of writing, this sector plays a relatively limited role in the economic life of Tuvalu. In 2015, only a small number of tourists (about 2,400 people but 1,000 more than 2014 and 2013) have visited the archipelago. Few of these travellers were tourists and migrants returning to visit their family. An important (about two thirds) were on business (development officials or technical consultants). However, Tuvalu has an attractive natural environment and the country offers beautiful natural scenery of tropical paradise, isolation and, in many parts, pristine environment. The unique Polynesian island culture is also an important asset of the tourism experience. The choice of Tuvalu as a holiday destination is primarily driven by culture, climate, activities and beaches, according to the Tuvalu Tourist Survey undertaken in 2015. The main island of Funafuti is the focus of travellers, because tourist activity is only centred on this atoll and mainly on Fongafale islet. One of the best attractions of Tuvalu is the Funafuti Lagoon which contains the local Marine Conservation Area (MCA). The MCA, covering 33 square kilometers of reef, lagoon and six uninhabited islets on the western side of Funafuti, offers swimming, snorkelling and environmental experiences with a unique marine environment a wide variety of tropical fish corals, algae, invertebrates and sea birds and turtles. In recent years, tourism in the Pacific Islands region has known an important development, and this sector can be for Tuvalu a new source of economic growth. However this activity is again too limited by the country's remoteness, significant weaknesses in airline access, accommodation supply, trained human resources and the provision of tourism activities.

D.2. Impacts of climate change on tourism

Tourism is an important weather and climate-sensitive sector for Tuvalu such as many small islands. In the scientific literature, there is currently no evidence that observed climatic changes in small island destinations have permanently altered patterns of demand for tourism.[59]. Nevertheless, three types of significant impacts on coastal tourism can be observed. The first ones are direct impacts of extreme weather events such as tropical cyclone, flooding, storm surges or high tides on the destruction of tourist infrastructure (beaches, accommodations, roads…). The second type is indirect impacts of extreme events (e.g., coastal erosion increase that causes the retreat of sandy beaches, destruction of food crops…). Last, the third type is global warming with sea temperature elevation, sea level rise and ocean acidification, leading coral bleaching phenomenon and loss of marine biodiversity. As for future impacts on island and coastal tourism, there is high confidence in the impacts of extreme events and sea level rise aggravating coastal erosion and beach reduction and of course a scenario of 0.5 or 1 meter sea level rise by 2100 would be a very real threat, particularly to the tourism industry but also to the nation as a whole.

Carbonate reef structures would degrade under a scenario of at least 2°C by 2050–2100 with serious consequences for tourism destinations in Australia, the Caribbean, and other small islands (Hoegh-Gulberg et al., 2007). As said earlier in this chapter, surface air temperature in Tuvalu's region is projected to increase moderately under RCP 4.5 trajectory, between 1 and 2°C (2081-2100 mean), and twice more under RCP 8.5 trajectory between 2 and 4°C (2081-2100 mean). A similar rate of warming (or slightly weaker) is projected for the surface ocean (high confidence).

In this case, climate directly impacts on environmental resources that are major tourist attractions for small islands. Widespread resource degradation such as beach erosion and coral bleaching will

[59] Scott et al, 2012a

negatively impact the perception of destination attractiveness particularly for the diving tourism of which tourists are well aware of coral bleaching, particularly the experienced diver segment.[60]
Short-term adverse tourist perception tends to emerge after the occurrence of extreme events.[61] Indeed it is clear that severe weather-related events in a destination country can significantly influence visitors' perception of the desirability of the location as a vacation choice.[62]

Finally, the incidence of drought and the availability of freshwater will be another challenge for tourism development in Tuvalu. Freshwater is limited on Tuvalu, groundwater is unsuitable for human consumption and the inhabitants depend solely on rainwater harvesting available by private and public rainwater catchment and storage equipment. Therefore, changes in freshwater availability or quality during drought events linked to climate change have adverse impacts on tourism.[63] Tourism is a seasonally significant water user in many island destinations, and in times of drought concerns over limited supply for residents and other economic activities become heightened.[64] For the development of this tourism industry investment should include climate risks, including those associated with the availability of freshwater. One climate adaptation solution so as to reduce the risk of water scarcity in tourism operations is the use of desalination plants.

In the short and medium term, tourism in Tuvalu will continue to be highly vulnerable to weather, with increased temperature combined with increased tropical cyclone, future sea level rise, and the added impacts of coral bleaching and ocean acidification (high confidence). As a result, tourist demand for coastal and islands destinations such as Tuvalu and tourist flows could decrease.[65]

D.3. Recommendations on tourism development in context of climate change

Given the constraints of tourism development in Tuvalu and in front of a highly competitive regional environment, ecotourism is a solution for tourism development. Ecotourism already exists in Tuvalu. It has low environmental impact and represents high-value activity with the development of niche markets such as scuba diving tourism, culturally-focused tourism, adventure tourism or environmental tourism.

In addition, Tuvalu has the opportunity to convert the threat of climate change into a marketing advantage and attract a specific tourist market. The questions of global warming, sea level rise and ocean acidification are today a global humanity concern whereby Tuvalu has been known and recognized as threatened islands. Considered one of the world's countries most vulnerable to climate change, Tuvalu has a very strong media coverage about it (stereotype of "lost paradise" or "Small is beautiful"…) and could brand itself into "the sinking islands". In fact, the country is one of the best places in the world to view the consequences of climate change and particularly of sea level change. In the Marine Conservation Area of Funafuti some of the small motu are already disappearing (such as Tepuka Savilivili[66]), under the effect of the intense coastal erosion, with many losing vegetation cover and reverting to sandy islets without vegetation.

However, in order to develop these tourism niche markets and in the same time protect and preserve its ecological capital and economic capital, Tuvalu has started investing in a variety of resource restoration initiatives including artificial beach nourishment, coral and mangrove restoration, and the establishment

[60] Gössling et al, 2012a; Klint et al, 2012
[61] Phillips and Jones, 2006; Scott et al., 2008
[62] e.g., cases reported with hurricanes in Anguilla: Forster et al., 2012 or heavy, persistent rainfall in Martinique: Hubner and Gössling, 2012
[63] UNWTO, 2012
[64] Gössling et al., 2012b
[65] Perch-Nielson, 2010
[66] In 1997, Tepuka Savilivili was devastated by tropical cyclone Keli with all its vegetation and most of its sand swept away during the cyclone.

of marine parks and protected areas.[67] Every initiative which can protect the coasts and the beach against coastal erosion and beaches reduction must be taken into account, especially in Funafuti's atoll where the tourist sector is centred and particularly Fongafale, the largest of Funafuti's islets with few sandy beaches but mainly rocky coral formations being far more common. For white sand beaches, the visitor must visit Fongafale or one of the other motu. Projects such as the project of Japanese cooperation "Pilot Gravel Beach Nourishment Against Coastal Disaster on Fongafale Island" are interesting and should be supported. The objective of this project is to examine the effectiveness and adequacy of the beach nourishment for the purpose of reducing the vulnerability against natural disaster. Although this project has been developed in the case of mitigation against climate change risk, it is an opportunity for coastal tourism development.

E. Agriculture and climate change

E.1. Agricultural issues

Despite the increasing level of food import, in response to the increasing population growth and the lack of self-sufficiency in agriculture production, agriculture is always a key sector in Tuvalu. Tuvaluan population are primarily involved in traditional fishing and agriculture[68] with the cultivation of trees, crops and livestock (pigs and chickens were introduced by Europeans). Agricultural production mainly revolves around subsistence and only a small proportion of local production supplies the domestic market. In fact, this sector is very limited by country's small land area and very poor and unproductive soils due to the young geological age of the reef islands and atolls and high level of soil salination. Therefore, opportunities for commercial production and export diversification are limited. As in the other Pacific islands countries subsistence agriculture involves the main traditional food crops: swamp taro (*Cyrtosperma chamissonis*) know in Tuvalu as *Pulaka* which is similar to taro (*Colocasia esculenta*). Taro are grown in pits and are planted according to traditional practices. Bananas, breadfruit, papayas, pandanus, sweet potatoes and coconut trees are supplemental food crops. With fisheries, domestically grown food remains the main source of nutrition for the people.

Agriculture is also based on coconut. Coconut trees grow widely and are managed traditionally to ensure continued production, fulfilling a variety of needs. As many Pacific islands, copra was Tuvalu's major export commodity in the 1990s, with yields of 2,000 tons in 1999, but at present time, as the industry became uncompetitive due to the declining price of copra on the global market, current production of coconut is only of few hundred tons per year, and decreasing year after year. A consequence is that the coconut trees on most plots of land are left unmanaged and unattended, resulting in many of the trees becoming unproductive and over crowded with nuts from the germinated trees.

E.2. Impacts of climate change on agriculture

At present, agricultural development in the country is limited and faces numerous challenges with the effects of climate change. One of the constraints is the very poor quality of the soil, mostly sand and rock fragments, which are porous and volcanic in nature and provide unsuitable growing conditions for crops and trees. Another problem is the growth population and particularly at Funafuti with increasing internal urban drift, and a changing lifestyle. In order to accommodate these many outer islanders, many houses had to be built on the expense of fields and trees. Because of this uncontrolled urbanization and water intrusion, plants are dead affecting the pulaka pits and consequently the capacity to be self-sufficient. Domestic subsistence agricultural production has been declining in the last decades and the people of Funafuti import 80 percent of what they eat. But the major constraint is the freshwater supply

[67] Mycoo and Chadwick, 2012

[68] In 2002, more than 38percent of all households in Tuvalu are involved or engaged in agricultural activities almost exclusively for their own subsistence needs (cited in DTSI, 2010 report).

in Tuvalu that presents challenges. On low atoll islands, there are no streams or rivers and fresh groundwater floats on top of denser saltwater only meters below the surface, making the freshwater lens only several meters deep. Fresh groundwater and rainfall are the unique sources of water. Fresh groundwater is the main source of water for agriculture, plants and crops. However, many islands have a saline freshwater lens in places, which may be unsafe for human consumption or agricultural needs. On porous limestone and low atoll islands, surface runoff is minimal and water rapidly passes through the substrate into the groundwater lens. Water in the lens of Funafuti is now contaminated with sewerage and is no longer potable. Nukufetau, Vaitupu and Nanumea are now the only islands with sustainable groundwater supplies. Water is therefore insufficient to meet the needs for domestic and agricultural uses. Reason of this situation is the increasing soil salinity and the salinity of groundwater due to saltwater intrusion. A study led by Nakada et al. (2010), on groundwater dynamics of Fongafale islet shows that tidal forcing results in salt water contamination of the surficial aquifer during spring tides. This aquifer salinization of Fongafale islet, due to saltwater intrusions with sea level rise, leads to a decreasing agricultural production and agricultural yields. More than 60 percent of pulaka pit plantations have been destroyed (the pulaka *Cytosperma chamissonis* is less salt tolerant) in Tuvalu and the remaining 40 percent remain highly sensitive to saltwater intrusion.[69]

In the next years, it is expected that the freshwater lens of each atoll of Tuvalu will be more and more fragile due to:

- Increased frequency of sea level rise, sea water intrusion and salt spray;
- Increased frequency of salt water contamination of the fresh groundwater lens during spring tides;
- periods of drought and of low rainfall resulting in contraction of the freshwater lens as vegetation (and particularly the coconut trees) using the water more than it can be recharged;
- With the population growth, freshwater lens being more used to supply human needs with a similar consequences explained above;
- Tropical cyclones and other storm events resulting in wave wash over, extreme high water and salt spray of greater intensity.

Contamination of the freshwater lens will bear increasing negative effects on food security and agriculture production with crop yield losses. The adverse effect is not limited to pulaka fields only. It will also impact other agricultural fruit trees such as coconut, breadfruit, pandanus etc., in the long term. Results in crop yield losses of 60 percent pulaka and coconut, 50 percent banana and 50 percent root crops and breadfruit are projected in the next few years.[70]

These threats to agriculture in terms of water supply will also have to take in account increased intensity and frequency of extreme rainfall projected for future climate. Excessive rain has resulted in the loss of some once productive agriculture lands and the flooding of plantation areas. These areas when dried after the cyclones often become boggy and difficult to cultivate. However, it is important to note than projections indicate a very slight increase in rainfall. Projections under the A2 high emission scenario simulate change between -5 percent to +5 percent in annual and seasonal mean rainfall by 2030, then increasing (>5 percent) by 2090 for Tuvalu.

Another expected effect of climate change on agriculture is more intense and frequent pest infestation events. Changes in precipitation patterns, water shortages, and particularly increasing air temperature, with combined effect of sea water intrusion, will increase stress on fruit trees, thus, rendering them prone to pest infestation. These pests and diseases include insects, plant diseases, and invasive plants and weeds. Increasing temperatures contribute to an expansion of the ranges of many organisms and also allow for higher rates of growth and reproduction in insect herbivores. Crop diseases can be animal,

[69] NAPA II Annexes, Government of Tuvalu
[70] ibid

fungal, bacterial, or viral in origin. Crop diseases are often spread through an insect vector. Fungal diseases are also common, and can spread via spores carried by wind. Dispersal plays a key role in the spread of crop disease. An increase in severe weather events such as tropical cyclone may also catalyse the spread of crop diseases across oceans. In Tuvalu islands, it was already noticed that increasing air temperature is correlated to the increasing incidences of fruit flies destruction on fruits, and the coconut scale pest (*Aspidiotuf destructor*) infestation on Nanumaga and Vaitupu. Radiation has also been reported to directly burn sun-facing side of green coconuts and breadfruits, reducing the quality of the fruit burned.[71]

In addition, increased temperature could affect health, productivity and reproductive efficiency of livestock (essentially pigs and poultry in Tuvalu) which provides the bulk of protein in the diet of Tuvaluans. A workshop « Livestock and Climate Change in the Pacific Island Region" organized by the Secretariat of the Pacific Community in Fiji in August 2011 came up with the following conclusions about the impact of Climate change on livestock production through:

- nutritional deficiency due to effect of climate change hazards to animal feed intake and metabolism, pasture and forage growth and feed storage, etc.;
- water availability changes in volume and quality of water sources;
- increased disease susceptibility due to added physical stress adapting to environmental changes, climate changes conducive to growth of animal pests parasites and undesirable weeds and forages, nutritional imbalances or water availability;
- Damage brought by the extreme events, to farm infrastructures and materials labour and maintenance.

Finally, with more intense tropical cyclones, induced strong winds and wave surges, damages will be more considerable to agriculture crops and farms.

E.3. Recommendations on agricultural development in context of climate change

Ensuring food security preserving domestic subsistence agricultural production is for Tuvalu a major challenge in the near future. Many potential responses could be proposed. Regarding total loss of pulaka productivity expected at Fongafale islet and in a near future to others Tuvalu islands, due to the direct impact of sea water intrusion, the most urgent need is to develop salt tolerant crop. The objective is to introduce and develop tolerant varieties and crops against damage from salt spray and rising sea levels on groundwater and in general against plants and trees growth stress,. To this end, it is necessary to broaden genetic base of traditional crops and to improve genetic research on traditional food crops and fruit trees for a better adaptation to the new conditions of soil salinity, of increase air temperature or drought events, severe wind conditions, etc. At the same sense, changes in rainfall combined with decrease in water supply could see the introduction of less water-demanding species and varieties. The introduction of new land management regimes that are better tailored to cope with the changing weather or rainfall patterns could also better respond to the challenge.

Regional, bilateral organizations and other development partners could provide technical and financial support to lead scientific studies on these topics and undertake impact assessment of changing weather patterns on traditional crops in Tuvalu, and support crop improving programmes focusing on climate change adaptation.

To preserve inundation of groundwater sources from salt water and particularly for the islands of Tuvalu not impacted by contamination of sea water intrusion, such as Nukufetau, Vaitupu and Nanumea, apply groundwater protection measures is a first step. Introduce adaptive agriculture management approaches could also be undertaken. Soilless crops, as the example of the small farm (0.3ha) developed by

[71] Ibid

Taiwanese people which have been producing on average 2,000 kilos per month of vegetables since five years, are successful adaptation measures against the increasing soil salinity.

Rainwater harvesting is the principal source of freshwater in Tuvalu. Increase and improve water storage capacity, apply water conservation techniques, water collection accessories, are also adaptation strategies to frequent water shortages through increasing household water capacity, this for either domestic or agricultural uses. Since the last severe drought in 2011, aid programmes of Australia and the European Union have been directed to improve the storage capacity on Funafuti and in the outer islands. In 2012, the Government of Tuvalu developed a National Water Resources Policy under the Integrated Water Resource Management (IWRM) Project and the Pacific Adaptation to Climate Change (PACC) Project for water planning. Desalination plant, when storage falls, for agricultural use could also be an alternative but the cost of water production and delivery remains a challenge for the Tuvaluan economy.

About risk of pest infestation include insects, plant diseases, and invasive plants, many measures could be applied such as increased collaboration with neighbouring countries on control of invasive species issues in the sub-region, application of pest and diseases management control, strengthening of quarantine and invasive species control measures, public awareness-raising programs on the risks from introduced pests and diseases, etc...

Monoculture plantations may no longer be suitable to the changing climate conditions. The promotion of crop rotation and fallows to maintain soil fertility and productivity, the promotion of multi-cropping system are mitigation strategies and adaptive management and risk-coping production systems which are likely to increase the resilience of agricultural crops to climatic events and prevent the spread of pests and diseases that is often associated with increased temperatures and high rainfall. These strategies may be an appropriate approach to manage soil and land in response to future changes, hence for food security for the population of Tuvalu.

Increase the cultivation area and restore degraded lands are also adaptation solutions. Borrow Pits Remediation (BPR) project, funded by the New Zealand Government is a good example of improvement of the living conditions on the island and restoration of degraded lands, which could be later used for agricultural development. The objective of BPR project was to fill all the borrow pits and low-lying areas on Fongafale (the coral base of the atoll was used by American army during World War II, as fill to create the runway of the airfield, which is now Funafuti International Airport). The project was carried out in 2015 with 365,000sqm of sand being dredged from the lagoon to fill the holes. This project increases the usable land space on Fongafale islet by eight percent.

Conclusion

Tuvalu is a small country facing major effects caused by climate change but also due to its position as an island country located in the Pacific Ocean. Thus, instead of separating trade development strategy from environmental issues, this chapter reconciles two sectors that are linked in many ways. Climate change could affect the way of doing business and alienate any efforts in increasing productivity particularly in agriculture and fisheries sector. Though climate change can boost tourism in its eco-friendly form, the frequency of natural disasters could also affect the tourism infrastructure and the confidence of tourists to come to Tuvalu.

Therefore, this chapter provides recommendations to mitigate the negative effects of climate change and guidance to adapt trade in Tuvalu to the specific environmental conditions affecting the country in order to achieve sustainable growth and resilience.

Chapter 5: Sectoral Trade: Agriculture, Fisheries, Tourism and Labour Mobility

The purpose of this chapter is linked to the recommendations outlined in the Trade policy Framework. Four Trade priority sectors were identified as major engines for economic growth, namely, agriculture, fisheries, tourism and labour mobility. This DTIS identifies deep sea minerals as an additional trade priority. Therefore, the chapter will look at the roadmap to connect Tuvalu with regional and global value chains as well as develop domestic trade productive capacities.

Given the existing constraints and the small potential for trade in the country, Tuvalu should pursue a niche market based on the principle of value addition in low volume targeting high-end export market responding to the demand for organic products and exotic brands. The country should also revive products and traditional farming to supply the local population and diaspora living in Australia, Fiji and New Zealand. This would help protect and preserve the collective memory on agricultural methods used in the Pacific Islands.

A holistic approach based on backward linkages would benefit Tuvalu. By connecting sectors such as tourism and agriculture- tourism being the engine and agriculture being the food supplier-, it can create positive externalities which will spill-over on the whole economy and the well-being of the population.

Chapter 5 looks into how Tuvalu can tap into trade opportunities and integrate global and regional value chains for the four trade priority sectors.

A. Agriculture

A.1. Introduction

Climate and land

Tuvalu's total land consists of just 26 km^2, spread over 900,000 km^2 of EEZs. It has nine island groups with Funafuti being the capital and Vaitupu being the main educational and agricultural centres. Tuvalu had no clear dry or wet season. The average rainfall varies between 2,700 to 3,500 mm per year, but there are significant variations.

Tuvalu's soil is of poor quality which supports limited flora and vegetation and it is dispersed unequally through the islands. The coconut woodland is the main form of forest cover, occupying about 54 percent of the land area, followed by the mangroves, which cover about 17 percent, scrub for 13.9 percent, broadleaf wood land for 4.1 percent, and pulaka pits for 2.2 percent. Altogether, there are about 200 different plant species, both indigenous and the ones brought from overseas.

Agricultural situation

In total, about 18 km^2 have been classified as agricultural land, which is highly fragmented and unequally distributed among the nine islands; the largest of which (Vaitupu) covers 520 hectares and the smallest covers 42 hectares. There are other 89 very small islets with less than five hectares. The small size of these islands poses serious difficulties to the development of a modern agriculture based on the modern cropping. Innovative solutions are clearly needed if agriculture is to play a role in the future development and security of Tuvalu. The most difficult challenges facing the country include maintaining adequate levels of soil organic matter in the face of salinization from rising sea levels. The main agricultural centre is located in Vaitupu, which has the largest continuous area of agricultural land. Agriculture activity in Funafuti, the capital, is limited since it has a much smaller area of agricultural land. Because of small agricultural area, there is no real agricultural activity in Tuvalu. Imports are the main source of food supplies in urban areas. Some vegetable production takes place in the individual

household plots and if there are surpluses, they are often sold in local markets. Traditional crops that grow well in Tuvalu are coconuts, pulaka, breadfruit, pandanus, bananas, taro, sweet potatoes and pawpaw. There are many constraints in the development of agriculture. In addition to the small size of agricultural land, the land tenure system, alienation of land, limited agricultural knowledge, labour shortage, lack of adequate extension services, and the legal and regulatory framework represent obstacles to the sector's development.

Land Ownership and Land Use

One of the most important issues about land use and agriculture development in Tuvalu is the system of land ownership. Under the 'Native Lands Act', which governs land use, every land is owned under the customary laws. The Government may however, lease land under the 'Native Orders' for development purposes. This traditional land-tenure system, based on the principle of subdivision and inheritance, has resulted in fragmentation of land pots. There are also disputes over land boundaries and multiple ownership. Such problems arise because of strictly limited land resource and continued population growth. A court system which can consider and rule on land conflicts would be important to release land for development purposes and agriculture.

The Agriculture Department organizes an annual 'day to plant trees'. On this day, people carry out a general clean-up of land and plant 'Fetau', so as to help stabilise the shore line. Under the National Waste Management Scheme, the recycling of organic matter is encouraged and a central composting plant is operational in Funafuti; this could be another potential source of energy. Villagers can buy compost at AU$2.00 per kg and are encouraged to use compost when growing crops and trees. Careful management of soil organic matter is essential to sustain production as the soils are poor and easily damaged.

A.2 Policy coherence and mainstreaming

Tuvalu DTIS 2010 Implementation

Given the small scale and the poor performances of the agriculture sector in Tuvalu, the DTIS 2010 recommended to focus on crop productivity and sustainability ensuring food security rather than an export strategy where the country has no added-value. The recommendations also included the setting up of an appropriate institutional framework to develop biosecurity and organic agriculture. The revival of the coconut sector was also mentioned in 2010. In order to implement these recommendations, it was suggested to strengthen the Agriculture Department with human resources and capacity building programs as well as the linkages with the local enterprises and the foreign commercial agriculture enterprises.

In 2015, the situation has not changed much and the same recommendations remain valid for the present DTIS. However, the government formulated the Tuvalu National Agriculture Sector Plan 2014-2023 (TNASP) which mainly focuses on Food Security, Employment and Biosecurity and thus respond to the concerns related to food security and productivity with an operational plan embedded in the TNASP.

The revival of the coconut sector is still relevant. Coconut is main export commodity. Current production stands at 300 tons a year but it is expected to increase following the objective by the government to revive the coconut sector by planting nearly 164 coconuts per hectare. Each tree produces an average of 200 coconuts. Indeed, production and export fell in spite of Government's support through the Vaitupu Company which processed coconut and closed down in 1980s. Since then the coconut sector has not taken off again.

Since 2007, attempts were made to develop the **coconut oil** industry by providing local councils with small machines to get oil. The coconut oil was sold in Funafuti and used for cooking, but it never found export market. The export potential is mainly the virgin coconut oil for personal uses.

Vaitupu successfully grew **sweet potatoes** and sold them to Funafuti. One private sector operator produced noni juice and exported it to Taiwan. But later it found the competition from other islands and gave up the production.

Other products that can be tried are **chillies, vanilla, and flowery plants** with the introduction of organic planning and the use of a regional certification system for export products.

The 2010 DTIS identified as priority action the development of the private sector and creating new opportunities for access to export markets. But the role of the private sector in commercial agriculture development remains subdued. Most recent data by the Department of Agriculture underlines the subsistence nature of agriculture production with the average size of coconut, pulaka, breadfruit, pandanus, bananas, taro, sweet potatoes and pawpaw plots at 0.2 to 2 hectares. Most of the land (95 percent) is owned by individuals and only some communal or crown land is found in the outer islands.

The DTIS 2010 also called attention to the importance of addressing the quality of agricultural production which is critical for succeeding in niche export markets. In this context, a pending task is the improvement and expanding coverage of extension services, including to provide quality training and basic tools and equipment to farmers to adopt and master organic production methods. Consolidation of land and/or production to meet certain scale and access to credit are also important. A focus in value added through local transformation was also noted in the DTIS 2010 and remains relevant. For instance, basic processing of breadfruit, production of banana chips and coconut toddy are feasible and an avenue for participation by the private sector.

Equally, value added opportunities of coconut oil through the production of soaps, hair oil, body cream, or body wash remain untapped.

Te Kakeega III

The TKIII highlights the supply side constraints of agriculture and recalled the weak performances of the sector. Therefore, the focus is more on strengthening the legislation and the re-structuring of the DoA to facilitate the compliance standards of food processing products as defined in the Trade Policy Framework and the development of organic farming. Indeed, the medium-term objective is to establish an Organic Farming & Marketing Authority so as "*to organize and increase farm production; train farmers in organic farming and conservation practices; set production targets for selected produce; and handle domestic marketing and sale of local produce*."

2016 Trade Policy Framework

The TPF underscores the traditional emphasis on subsistence agriculture production in Tuvalu and the consequent underdevelopment of commercial agriculture, especially for exports. Therefore the TPF recommended the following:

- Introduction of legislation related to sanitary and phytosanitary measures that would protect human life, plant and animal life and health and create the foundations for exports to international markets where.
- Adoption of the International Seed Treaty.
- Realization of an agriculture census every ten years to improve statistics for planning purposes:
- Undertaking comprehensive studies on the coconut industry and the value chain to identify a pathway for the industry's development.
- Increasing productivity?? In subsistence agriculture with a focus on the land availability and food security.
- Development of organic farming, processing of agricultural crops accompanied with advertising and marketing of the processed agricultural products.

- Institutional strengthening of the Department of Agriculture.

Tuvalu National Agriculture Sector Plan, 2014-2023
The Department of Agriculture with support from FAO, prepared Tuvalu National Agriculture Sector Plan 2014-2023 (TNASP). The TNASP looks into infrastructure on biosecurity and biodiversity of agricultural industries with an emphasis in organic farming. TNASP envisages the upgrading of marketing networks. Coconuts have always been important subsistence and commercial crops. Thus, TNASP looks on both, marketing and various types of products that can be derived from coconuts and its trees involving detailed value chain analysis.

The policy foresees the formulation and adoption of new bio-security and animal health legislation to update the legal framework. The TNASP's Action Plan also recommends providing training to farmer's association and marketing organizations.

The TNSP emphasizes the need for the introduction and testing of new varieties of food crops and breeds of animals to enhance productivity and the strengthening and expansion of extension services While farmers respond well to farming campaigns, these have been discontinued due to financial constraints. At the same time, new pests and diseases have entered the country with salt water intrusion. On animal health, there are no qualified veterinarians in Tuvalu.

A.3. Update on Agricultural Development

Need to restructure Department of Agriculture
As mentioned above, Tuvalu's policy direction regarding agriculture development has in particular emphasized improvement in subsistence agriculture. Efforts were made to supply farmers with, training and tools for production and strengthening and expanding extension services. While some progress has been made in this regard, a pending task is addressing the institutional constraints of the Department of Agriculture itself which is meant to lead and engage farmers and the private sector in the development of agriculture in Tuvalu. The Department of Agriculture needs restructuring, a review of functions and means, and redesigning with appointment of more staff and a focus on results. The Department will also need a Land Use Plan for agricultural land development. The Department should also further emphasise training and extension services support in organic farming which can help the branding of Tuvalu's products in local and export markets.

Standards and Sanitary and Phyto-Sanitary (SPS) measures
As part of its export promotion policy, and in order to ensure access to regional and international markets in the best conditions, Tuvalu needs to ensure that the value chain from production to storage, packaging and distribution is such that products are compliant with existing international standards. This would encompass conformity with relevant SPS standards in a wide variety of areas, in particular, among others, but not exclusively, those regarding environmental, safety and security fields. In that respect, the WTO SPS defines benchmarks for the adoption of the SPS measures by member states.

The need for the development of sanitary and phytosanitary compliance capacity is acknowledged in the Tuvalu National Agricultural Sector Plan (TNASP) which puts emphasis on strengthening enabling framework, infrastructure and support activities. The need for compliance and certification is also included in the Strategic Area 8 of the TKIII: Natural Resources Matrix of the National Development Plan.

A.4. The way forward and recommendations

Primary Processing of coconut

To start with, it is very important to develop an institution such as "Coconut Development Board" to promote coconut based industries. Next stage is to organize the coconut growers and farmers from all the islands into cooperatives or under the councils for collective mobilization into "farm school".
For a long time, the coconut was neglected and there is a need to replant coconut trees to replace old and dead coconut trees using high-yield coconut varieties. Prepare coconut nurseries in every island. This can be done by island councils and by organizing "coconut planting competitions".

It is very important to organize all potential coconut processing SMEs into clusters for short training in value chain development. The coconut cooperative farmers should start with falling coconuts from mature trees and preparing copra. The copra can be dried in open sun. Use single cooperative store in every island to dry and store copra.

Further Processing of Coconuts
Encourage private sector SMEs and/or cooperatives to import the coconut oil expelling machines. Encourage SMEs to start coconut based industries from copra to the coconut oil, to coconut hair oil and hair cream, coconut oil soap, coconut oil body lotion, coconut oil sun cream, coconut oil bath wash, coconut oil shampoo, etc. Coconut oil expelling machines cost about USD 4000/-.to 6,000/- Rest of the processing is simple but of high value. The coconut hair oil processing requires addition of colours and perfumes with attractive packaging. The coconut body lotion, coconut oil sun cream, coconut oil bath soap, coconut oil bath wash and coconut oil shampoo only requires perfumes, colours and mixing. Mixing may be done by hand or small mixing machines for small scale production. What is more important is "organic" branding and attractive packaging. Fiji has been producing "world class" soap under SMEs. Provision of one expert chemist from donor countries will be very helpful for the initial training and "start-up" stage. Access to finance should be facilitated for the SMEs, either through concessional grants or microfinance schemes to buy the oil expelling machines and mixing machines as appropriate.

Use of other parts of coconut trees.
Tuvalu can use dry coconut shell to make shell powder. The shell powder is used to make mosquito coils, agarbatti (long burning incense stick used by Hindus and Buddhist in prayers), used as compound filler in plastics, synthetic resin glues, and make coconut curios from the coconut shells. Demand for these products is quite high in developed countries. The coconut shell also makes excellent activated carbons. In some European countries, it is a speciality to serve ice-cream in coconut shells. Equally important is the use of the coconut husk. Coconut husk is used for making rope, coir, mattress, and sofa seats. Coconut husks also provide good fuel. In Vanuatu, coconut husk is used for making fortified roof tiles. Treated coconut wood is excellent for furniture making and construction. For instance, treated coconut wood is an expensive item in East Africa.

Improving Coconut Technology
With slightly improved technology, it is possible to use young coconuts for sparkling coconut water juice, coconut "burfi" or ice cubes, coconut yogurt, coconut sweets, coconut cookies, coconut jam, and coconut chips from young coconut meat. Coconut sap, "toddy", from coconut trees are good natural drink which can be packed and sold. It can be good tonic if turned into concentrated sugary drink. Most of these processes require small capital and creative skills which can be acquired from short-term training. Sanitation standards and packaging are however, very important for such SME food industries. Most of these items could replace imports and increase sales to the local tourism industry.

Identification of salt tolerant crop varieties
Given the clear threat of land salinization due to rising sea level and the intensity of tropical storms, it will be prudent as a climate change adaptation measure, to adopt salt tolerant crop varieties. Efforts could be done at the regional level strengthening the regional gene banks and learning about well adapted varieties in other countries to evaluate possible replication in Tuvalu's conditions. The role of

extension services staff would be critical, working with councils to help diversify from traditional vegetable planting towards climate resilient "home gardens" located around houses.

Some plants are doing well in saline land in Tuvalu. This is the case of **periwinkle** plant which is well adapted to the sandy soil of Tuvalu. More such plants should be planted in and processed for medication. Other salt tolerant plants are **moringa** trees which are growing in Funafuti. Moringa leaves and seeds can be used for health tonic. They contain high dose of potassium which is good for heart, growth and memory. Similarly **lemongrass** grows well in sandy soil and can be planted for harvesting as spice and for health purposes. Lemon grass tea commands high prices and is commonly used in many countries. Similarly lemongrass flavour is commonly used in ice-cream. Lemongrass oil can be used for soap, body lotion and cough syrup. **Aloe vera** is another crop which can grow well in sandy and saline soil. Aloe vera can be used for health cream, hair oil, soap and shampoo. Aloe vera juice is also tinned and drunk for health consideration since its Ph. value is similar to the human skin's.

Tuvalu had planted sandal wood and vanilla some time ago and they grew well but were later neglected due to high competition from producing countries such as Indonesia and Madagascar for vanilla and India for sandal wood. Both plants are high priced plants and could be revived. Incense sticks are made from sandal wood powder while bathing soap, hair oil, perfumes and body creams are made from sandal wood oil. Vanilla has always been used as important food ingredients in ice cream, milk products, and sweets.

Planting vegetable and fruit crops

Food security is very important for Tuvalu and thus it is important to identify import substitute products for the local diet through traditional crop development and through research and the experimental farms. There is a need to plant salt tolerant crops like okra, chillies, water melons, small lime and pawpaw. Some of the vegetable crops can be used for producing pickles while lime and pawpaw can be used for making jam. They will be bought by local population as well as the tourists. All processed products grown under the organic farming are well priced.

Agricultural Laws and Agricultural Finance

To be successful, it is very important to have a favourable agricultural business climate including agricultural investment laws, business regulations and procedures as well as the tax regime and land regime. In a free market economy, it is the business climate that will determine success or failure of the business. Equally important is to mobilize co-finance from donors. There is a need to prepare credit institutions and organize microfinance institutions to provide farmers with loans. One option could be a financial arrangement between IFAD and SPC, where SPC enter into subsidiary financing agreement with each project.

Monitoring and Evaluation

Conduct Monitoring and Evaluation of the agriculture sector on regular basis.

B. Fisheries

B.1. Introduction

Tuvalu's small land area of only 26 sq. km. limits the prospects for agriculture or other forms of terrestrially based development. Therefore, the country places much hope for future economic growth on the fishery resources contained within its large EEZ area, which covers 900,000 sq. km. Most of the fish landing in Tuvalu are ocean species mainly skipjack and yellowfin tuna, others are reef and lagoon species and some bottom fish from deep slope areas. It is estimated that 74 percent of households participate in reef fishing and 63 percent in ocean fishing.

B.2. Policy coherence and mainstreaming

Tuvalu DTIS 2010 Implementation

As underlined in the 2010 DTIS, revenue from fisheries constitutes a major source of income for Tuvalu, mainly from licensing fees from District Water Fishing Nations (DWFN) whose value was expected to increase. In that regard, the negotiation of access rights was to provide a significant bargaining position to Tuvalu.

Inshore and near shore, including reef fisheries on the other hand, were important for food security, and livelihood diversification for local communities. Beche-de-mer is the only inshore and near shore fish export from Tuvalu. Locally, fresh fish is preferred.

Fisheries compliance, monitoring and surveillance (CMS) was one of the major activities of the Fisheries Department. The Marine Zone Act of 1984 established 12 nautical miles of territorial sea, 24 nautical miles of Contiguous Zone and 200 nautical miles of EEZ. The licensed DWFNs ships were prohibited to fish within the 12 nautical miles territorial sea of Tuvalu and should comply with licensing conditions. The fishing license fees were assessed on the volume of fish captured.

As suggested in the 2010 DTIS, Tuvalu created a community fisheries management program to create community fishing reserves or conservation areas. There are 10 conservation areas in eight islands of Tuvalu managed by local communities using traditional systems. Only one conservation area was established under formal legislation, however. Other conservation areas included an Island Care Project which monitors marine turtles on atolls and the Whale and Dolphin Action Plan and Regional Action Plan on Turtles. Going forward, all the ten conservation areas should be established under formal legislation, including the Island Care project.

Tuvalu's DTIS 2010 proposed further consideration to be given to the employment opportunities that could be derived from the fishing licences for the local population through conditions included in access agreements for the employment of crew. Since then, the Tuvalu Maritime Training Institute has focused on the training of fisheries manpower to be placed in the fishing vessels. Legislation foresees as condition for licensing the employment of 20 percent of ship's crew be reserved to Tuvaluans on each fishing vessel but compliance has been week so far. In that regard, the Government of Tuvalu has already drafted regulation to impose the recruitment of Tuvaluan fishermen on the fishing vessels.

The 2010 DTIS foresaw a number of priorities for fishing development. Limited progress was made on the following:

- Implementation of the Tuna Management Development Plan (TMDP);
- Review of the CFCs and their privatisation or closure;
- Introduction of longlining operation under NAFICOT;
- Improvement of management of foreign fishing licensing;
- Formulation of the integrated fisheries sector development plan;
- Strengthening role of local and international private sector.

Trade Policy Framework

The TPF identified the following recommendations as priorities for the fisheries sector:

- Technical assistance on management to NAFICOT;
- Guidance on the negotiations at regional level to defend Tuvaluan interests;
- Promotion of employment opportunities for Tuvaluans on fishing vessels;
- Linking licensing fees to onshore investments from foreign companies. Similarly, the kaupule / falekaupule should be able to manage inshore fisheries to provide local food security and thus be provided with financial resources to implement their management plans;

- Concentrate scarce resources should on the support and promotion of beche-de-mer and live fish/corals for aquarium trade;
- Create investment incentives to explore potential of new marine products (restocking Eucheuma seaweed and cultured pearl oysters were abandoned due to lack of investment).

Te Kakeega III

In recent years, the licensing revenue has increased from AUD 8 million in 2012 to over AUD 31 million in 2015 mainly as a result of better fisheries management. TKIII foresees the Department of Fisheries should seek to stabilize and expand its revenue base. It also emphasizes the need for improving building facilities for testing laboratories covering facilities on food hygiene testing and the adoption of fishery development and management plans with island specific guidelines.

TKIII foresees amendments to the fish licensing conditions to include mandatory employment of certain percentage of Tuvaluan graduates in the purse-seine vessels; the promotion of the national fishery observer programme and, with the support of the Forum Fisheries Agency (FFA) and the Pacific Community, training and operational advice. The document sets the target of employing at least 100 observers by 2018. Tuvalu still has to fully comply with Western and Central Pacific Fishing Commission (WCPFC) provisions regarding fishery management requirements, such as the five percent observer coverage and timing submission of annual reports. Also in 2014, EU found that Tuvalu did not have the control system in place to monitor its EEZ and classified Tuvalu as non-cooperating country for illegal unregulated fishing issuing u a 'yellow' card. Should Tuvalu be given a red card, the value of its licenses will be undercut with clear financial implications for the country. The EU has rejected Tuvalu fish because it did not meet the EU's phytosanitary requirements and the US may follow the same in the near future. TKIII foresees that the DoF, with support of FFA, will, comply by instalments and gradually with WCPFC's provisions.

B.3. Update in Fishing Industry

Current Situation

Tuvalu has some commercial inshore fishing which includes Beche-de-mer and shell harvesting which is used by women in handicraft production. Since long, Tuvalu has been operating pole-and-line-style tuna fishing using pear shell lures. Today, trolling dominates fishing.

To develop a local tuna industry, Tuvalu's Fishing Department established the National Fisheries Corporation of Tuvalu (NAFICOT) which operated a Japanese pole-and-line vessel, FV Te Tautai. The company became the government's commercial fishing arm, inclusive of cold room and ice making facilities. Later, two Korean long liners joined. The Government of Tuvalu through NAFICOT established two joint ventures (JVs) with Asian fishing companies for the development of the local tuna industry. However, the revenue stemmed from the JVs remain quite low with 6 percent of average fish license revenue and less than 2 percent of total 2015 domestic revenue[72].

NAFICOT ceased from operation due to bankruptcy. Since the closure of NAFICOT, people sell fish at road side in coolers. Several factors explain the unsatisfactory results of efforts to develop the local tuna industry such as lack of skilled mariners to operate fishing vessels; limited knowledge and technology transfer by DWFNs which buy licenses leading to low localization of expertise; the isolation of Tuvalu's islands; and poor handling and shipping infrastructure. However, the objective stated in the TKIII is to relaunch the NAFICOT which will have to run the Government fisheries joint ventures. It was proposed that control of financial management should be shared with both the joint venture partners.

[72] Te Kakeega III

The outer islands, on the other hand, established Community Fishing Centres (CFCs) since the 1990s under NAFICOT. However, due to shipping and marketing problems, the CFCs did not run well and was highly dependent on government subsidies.

Some of the difficulties in establishing a domestic tuna fisheries are: i) High investment cost for suitable vessels and high cost of attracting investment; ii) Lack of basic infrastructure like safe anchorage for ships, longer runways and sufficient water/power. iii) Scarcity of land; and iv) Shortage of realistic overseas market opportunities.

Tuvalu has signed several bilateral access agreements with countries whose flag vessels operated in Tuvalu EEZ such as Federal Stated of Micronesia, Fiji, Japan, Korea with the highest number of licenses (61), New Zealand, Papua New Guinea, Spain, Taiwan, and the United States.

A Multilateral Fisheries Agreement between the US and members of the Forum Fisheries Agency (FFA) including Tuvalu, was concluded in 1987. It established terms and conditions for US tuna purse seine fleet. US also provides assistance to Tuvalu under the Economic Assistance Agreement related to the Fisheries Agreement. In 2014, The United States and the FFA agreed that the US purse seine vessels will fish 8,300 days in 2015 for USD 90 million out of which Tuvalu's part was USD6 Million. Under the Vessel Day Scheme (VDS) introduced by Parties to the Nauru Agreement, Tuvalu was allocated 1,900 days and is getting USD 12,000/- per day.

Besides the VDS Scheme, Parties to the Nauru Agreement proposed several management measures to strengthen the Nauru Agreement including Federal States of Micronesia (FSM) arrangement under which Tuvalu will receive fees from other PNA for their vessels fishing in Tuvalu's EEZ and vice versa. In 2013, there were seven Tuvaluan flagged fishing ships in Tuvalu's EEZ as well as Fiji, Kiribati, PNG and Nauru under the FSM agreement.

A Japanese grant had enabled to acquire six GRP (New modern fishing ships, Fishing Displacement Launch) launches for commercial fishing by National Fishing Company of Tuvalu (NAFICOT). NAFICOT had used two of the GRP launches for fishing and sold its catch at a small outlet in Funafuti. It also made occasional exports of deep bottom snappers. In the early days, the fish aggregation devices (FADs) together with mid water fishing techniques were put around Funafuti and, later, at all outer islands so as to improve on artisanal tuna subsistence fishing. NAFICOT had also operated Japanese aid pole-and-line vessel, Te Tautai, which had produced good catches. But it had a poor supply of baitfish and often fished under license in Fiji and Solomon Islands. The ship was chartered by South Pacific Commission for regional tuna tagging work and later it sunk in the Funafuti lagoon.

Tuvalu had embarked on fish drying at Nukufetau under Australian sponsorship. It concentrated on salt fish and tuna jerky for overseas market and Funafuti. The major constraint was export logistics. At present nearly 15 percent of fish landing is dried for later use in Tuvalu. At present there is considerable foreign fishing in Tuvalu where vessels from USA and Japan accounted for major catch of skipjack and yellowfin.

Institutional and policy framework

The Fisheries Department and the National Fishing Corporation of Tuvalu (NAFICOT) take full responsibility of fisheries and marine resources. The most important fisheries law in Tuvalu is the old Fisheries Ordinance incorporated into revision of 1990 laws of Tuvalu. Other important legislations are the Marine Zone (declaration) Act of 1993 and the National Fishing Corporation of Tuvalu Act of 1980 (revised in 1992).

In 2006, the Government of Tuvalu enacted the Tuvalu's Marine Resources Act so as "to ensure the long-term conservation and sustainable use of the living marine resources for the benefit of the people

of Tuvalu" and developed the Fisheries Investment Incentives Policy in 2011 aiming at promoting foreign investment to: i) reverse the negative current trends of offshore licensing revenue (from $18 Million in 2013 to $17 Million in 2014), ii) improve fishing management by positioning Funafuti lagoon as the major tuna landing and transshipment port in the Western and Central Pacific Ocean, iii) ensure employment of Tuvaluans in the fishing sector and iv) secure the fish and marine resources through conservation and preservation-based management. In addition, Tuvalu adopted a Tuna Management Development Plan (2015-2019). Last the restructuring of the Department of Fisheries illustrates the great importance of fishing for Tuvalu. The Department comprises now 42 staff (before there were 32 staff) with new positions in the Oceanic Fisheries department. This reform was funded by New Zealand under the "Tuvalu Fisheries Support Program (TFSP)" (2014-2019).

The Department of Fisheries with the support of international agencies, undertakes research regarding the status of the main fisheries' species and resources such as through for instance, the bottom fish, bait fish, pearl oysters. The Ciguatera Monitoring Project established after the outbreak of fish poisoning on Nui Island is particularly relevant in this context. Research also aims at identifying new areas and techniques with potential commercial value in fishing and aquaculture.

The Fisheries Department is responsible for extension services. Emphasis is made on training to fishermen on outboard motor maintenance, fishing techniques, fish processing, and safety at sea. Other training areas include:-

- Training on improved fish handling.
- Training of public sector stakeholders in food safety, fish quality, market management and cold chain best practices.
- Training to artisan fishermen, processors and traders; development of a manual designed to improve returns from regional and international trade.
- Capacity building on the FAO Code of Conduct for Responsible Fisheries. Organizing national and regional capacity and research workshops.
- Training on international standards and regulations (ETO, EU, Codex), codes of practice (CCRF, GAP), and on international standards of fish trade ([EU Cambodia).

Tuvalu has a National Coordinating Centre which monitors foreign fishing vessels' activity within Tuvalu EEZ. It is the Centre which acts as the main contact point with foreign ships and Fisheries Department.
The Government encourages the private sector to enter into JVs with foreign investors so as to establish viable fishing operation with shore facilities for processing and exporting fresh or processed tuna based in Tuvalu. Offshore fishing has generated increased income through licensing and the Vessel Day Scheme (VDS). The government of Tuvalu will continue with its efforts to benefit from improving efficiency and effectiveness of regional agreements and the VDS.

Utilization of the catch
NAFICOT established a small fish retail shop near the main Funafuti wharf and export shipments of deep bottom snapper. Local fishermen on Funafuti sell their excess catch locally. Inadequate shipping services, lack of adequate cold storage and landing sites has constrained efforts to penetrate wider markets for outer island fishermen. Outer Island has attempted to produce solar dried tuna jerky, but it did not develop to commercial scale. There has been some export of finfish and beche-de-mer.

Economic and social importance of fisheries
Fish is the most common source of protein in Tuvalu. Though fresh fish is preferred, salted and dried fish is also commonly used. It is estimated that per-capita consumption is on average about 100 kg. This excludes consumption of imported tinned fish. Fisheries employ about 5 percent of paid employment and 20 percent of substance activities. Fishing is responsible for about 7 percent of Tuvalu's GDP.

Out of all the access fees obtained, the major part came from US purse seine fleet and it is more than 40 percent of GDP of Tuvalu. The potential of marine resources for development by connecting with reliable inter-island transport, identifying joint-venture partner to exploit snapper resources and strengthen research activities of the Fisheries Department. Tuvalu has been issuing fishing license to 70 to 80 foreign fishing ships.

Investment and fishing
Tuvalu's legislation on immigration does not foresee special provisions for investors. The Minister responsible for the sector where the investment is planned, decides on extending visas. Visas for Tuvalu are issued for four months. FDI investors, must submit a written request for visa to the Ministry concerned attaching a health and police report, and birth certificate. These procedures are heavy and discourage investment. Besides, business registration is equally lengthy. But the most constraining provision is the requirement to involve a local partner whose share must equal at least 60 percent of the investment.

Fishing Management
Since 2012, fisheries contribution to the budget has been about an average of USD 13 million annually and it is expected to rise up to USD 25 Million by 2017. Tuvalu may sell access rights to fish processers for extra income. By 2016, NAFICOT will be fully reformed and will be operating in a professional manner managed by directors appointed from outside the government. It is planned that by 2017, there will be three more joint ventures, one longline and two purse seine.

Since 2014, Tuvalu was accused of not complying with the Western and Central Pacific Fishing Commission (WCPFC) management measures. Tuvalu was accused by EU as an illegal fishing nation and was issued with yellow card. One of the targets for the Department of Fisheries is:

- Full compliance with WCPFC and removal of yellow card;
- Increase capacity to detect and prosecute for illegal fishing;
- Improve the system of managing fishing licenses and allocation of Vessel Day Scheme.

Observer Programme
Those Tuvaluans who are working in the off shore vessels are part of the Regional Observer Programme. There should be one observer per fishing vessel. Illegal fishing occurs due to lack of monitoring the catch. By mid-2015, there were 50 observers and they were expected to rise up to 70 by early mid-2016.

B.6. The way forward and recommendations

Quality and standards compliance
In December 2014, the EU classified Tuvalu as a non-cooperating country in terms of Illegal, Unregulated and Unreported (IUU) fishing attributing a yellow card to the country. Since then Tuvalu entered into negotiation with the EU to discuss on the upgrading of surveillance, quality and certification infrastructure and systems to be able to export fish products in international markets. Though the size of the fish export to the EU, a red card would prevent any fish export to all EU markets. In this context, regional solutions, including infrastructure and services, may be pursue due to the size of investment required and the economies of scale to be made through regional approaches. In addition, Tuvalu, can use Fiji, Australia or New Zealand laboratories for the certification and compliance. Samples can be picked up at random to be sent to any of these laboratories for standard measurement.

Benefits of international investment
At present, according to Tuvalu laws, the foreign investment must have a local partner with a share of 60 percent. It may be difficult for a local partner to have capital contribution of 60 percent and this

discourages FDIs and encourages corruption. It would be important for Tuvalu to reflect upon the role of FDI in the development of priority sectors, including fisheries and adopt a conducive legal framework.

Fishing License and Employment

- One of the conditions for issuing fishing licenses to foreign fishing vessels is to employ minimum number of Tuvaluans, i.e., 20 percent Tuvaluans in the fishing vessels hence creating employment.
- Global sea warming is creating rise of plankton in the sea. This has also given rise to fish stock in Tuvalu EEZ. Because of this rise, there is a need to adjust the daily fees for Vessel Day Scheme with the projected amount of fish. A daily fee charged under the VDS is decided by individual country.

Fish Preservation and Fish Processing

Fish preservation is a very important aspect of fisheries. There are several methods for fish preservation. It involves chilling, freezing, salting, fermentation, drying and dehydration, smoking, pickling, spicing and canning. The fish treated should be fresh. Conditions for processing fish include:

- Smoking (for non-oily fish). This is a process particularly useful for fish to be preserved for long time. For this purpose, a small closed shed made of palm leaves is sufficient. The dimension of shed will depend upon the quantity of fish to be smoked. But height should not be less than 6 feet. Racks are built in the shed to hang the fish or to lay them. Hanging of the fish can be 3 feet from the ground level.
- Icing. Ice preserves fish and extends shelf life by lowering temperature. Thus keeping fish in ice or keeping fish in cold storage will preserve fish for a long time
- Drying. Fish can be dried whole or salted. Whole dried fish better conserve flavour.
- Pickling is the process of salting fish in a solution containing salt, acid and alcohol. In pickling, there is no need of any special equipment Pickling is often combined with another method such as fermenting, canning, or just refrigeration.
- Curing is similar to pickling. The process uses salt, acid and nitrates. Simple curing methods often reduce the amount of salt and nitrates which may require some refrigeration to freeze the final product.
- Fermenting is the process of encouraging the growth of ‘good bugs’ to inhibit ‘bad bugs’ that can spoil the food.
- Drying is the process of dehydrating the fish until there is not enough moisture to support microbial activity. There are several different techniques which are relatively easy to do and require no special equipment.
- Smoking is a complementary process to curing that improves flavour and appearance and can also act as a drying agent. Smoked fish is less likely to turn rancid or grow mould than unsmoked fish.
- Last, Tuvalu may also consider fully exploiting the option of selling to intermediaries in Fiji fresh produce for processing to be later exported to international markets.

Plankton Harvesting

- There are two main types of plankton, phytoplankton and zooplankton and both of them can be harvested from the deep sea. Plankton is low dry weight and high value commodity; 0.1 gram dry weight can be harvested from 1 cubic meter of water. Plankton can be used for human nutrition, medicines, animal nutrition, oil, and bio-fuel. It is easy to process plankton for Vitamin A, Carotene, Vitamin E, Vitamin B, Omega Supplement and Riboflavin. Tuvaluans can harvest it in their smaller boats using stramin or conical nets. The extra investments are small. Dried plankton can be exported to Japan, USA, EU, or Brazil through established local cooperatives. As years pass-by, some extra local investments may help to obtain oil, human food and animal feed locally.

Pearl Farming

- Tuvalu has pearl oysters and divers can be trained to dive for pearls. The Marine Training Institute could take the lead on training. Tuvalu should start farming cultured pearls in every island. Many years ago, cultivated pearls were farmed in one of the outer islands. Since the family migrated, the industry died. Revival of this industry may bring in much needed export revenue and create employment.

Crab Farming

- Coconut crab industry should be encouraged to grow. Coconut crabs may live for 50 years and demand for consumption is increasing.
- Mud crabs are also important. They are found at mangrove swamps and are in demand due to good taste. Both coconut crabs and mud crabs are found in outer islands and their exploitation can generate employment.
- It is important that crab is harvested sustainably such as the EU/Australia project on the commercial mud crabs business in Fiji.

Fish Ponds

- Due to climate change, population rise, over fishing and pollution in the lagoon water, fish stock is declining in the lagoon. There is a need for fish ponds to increase supply of fish

SME Fish Processing

- Enhance the capacity of fish processing SMEs to formulate bankable project proposals.
- Support country assessment to identify investment and fish sector development constraints.

Expanding Tuvalu Maritime Training Institute with new training skills

Tuvalu Maritime Training Institute should provide specialised training in the following areas:

- Scuba diving – may be useful in pearl collection and deep sea fishing. There are reports of diving accidents with beche-de-mer collection using compressed air perhaps due to minimal training and lack of Scuba Certification; Tuvalu should have scuba divers for any emergency situation.
- Welding course – may be useful in boat repairs and underwater welding; welding may also help in making different items from scrap iron.
- Firefighting course for working in the fishing vessels; this course will also improve chances of employment in vessels.
- Maritime Communication Distress courses for working in fishing vessels.
- Masters / Engineers / Class courses for working in fishing vessels; this course will help workers in vessels to renew their pass.
- Boiler Stimulator for the trainee and for chief officer to renew their ticket;
- Purse seine crew course for fisheries; this course will help the workers to renew their contracts.
- Basic safety course for workers in fishing vessels.

Monitoring and Evaluation

- Conduct Monitoring and Evaluation of the fisheries sector on regular basis.

C. Tourism

C. 1. Introduction

Tourism and Development

The tourism industry has a strong potential for development. The industry provides opportunities for employment and linkages with the local economy providing an outlet for the local agriculture production, handicraft, services, etc. But the benefits of tourism development are not automatic. Too often, leakages from the tourism activities are significant reducing the socio-economic advantages for the local economy. Tourism development can also have negative environmental impacts if the policy and institutional framework and their enforcement are inadequate.

Tuvalu has unique assets for the development of tourism but its environment, increasingly fragile due to climate change impacts, could be irreparably damaged by unmanaged tourism activities. On the other hand, local communities can benefit from livelihood and income opportunities created by increased tourism activities and the valorisation of local products and culture.

In 2015, 2,400 tourists visited Tuvalu. The 2015 Tourist Survey provides an idea of the profile of tourists visiting Tuvalu: 23 percent of tourists came from Fiji, 14 percent from Australia, and 12 percent from New Zealand, out of which 43 percent had visited Tuvalu before. The average stay is of 12 days and the spending average is of AU$ 132 per night. Most of the tourists reported engaging in sightseeing and cultural tours, 57 percent swimming and snorkelling, and 14 percent bird watching. Close to half or 42 percent were between middle and old age. Most of them obtained information about Tuvalu from internet sites and arranged their holidays by themselves. Most of the income spent in Tuvalu was in accommodation and food. Very little was spent on recreation, shopping and tours reflecting the limited scope of tourist products and services in the country.

C.2. Policy Coherence and Mainstreaming

Tuvalu DTIS 2010 Implementation

The 2010 DTIS, underlined the importance to improve transport and tourism infrastructure including upgrading of the international airport and moving the visitors' information office to a prominent location. These actions have not yet been implemented. The DTIS further suggested to set up efforts in marketing the Tuvalu destination by for instance, developing a database of travel agents, producing promotional brochures, posters, destination marketing plan, identifying potential wholesalers and distribute commissionable packages, establishing website through SPTO to market the destination and provide relevant information to travellers, increasing yacht visit by producing small "cruising guide" and preparing accommodation guide, and branding Tuvalu like "Edge of Horizon".

Efforts have been made to enhance access to finance to SMEs participating in the tourism industry. All the tourism enterprises have been able to access business start-up loans (small amount only) from DBT but their ability to pay has been mixed. The development of tourism sector grouping within Tuvalu National Private Sector Organization is a step in the right direction since it allows the private sector to better coordinate and articulate their positions and actions in dialogue with the Government and for development of the industry, for instance, by structuring packaged services and products for target clients, assisting tourism enterprises to market their products and mobilizing finance for the sector.

Significant efforts remain to be made on marketing the destination and providing basic information to travellers about tourism products and services, and amenities such as local festivals events and activities.

The high costs of telecommunications constitute a burden for the development of tourism industry. It increases the costs of marketing the destination while internet should be an ideal tool for accessing new markets and target customers for a destination such as Tuvalu which is far away from key markets.

Handicraft is the key sector of tourism in Tuvalu. The major retailer of handicraft is Tuvalu National Council of Women with an outlet near the airport. Yet prices are high and the range of handicrafts is

limited. The prices of raw materials have been rising and these raw materials should come from outer islands. Most of the products sold lack "value added". No history or no story is known regarding traditional Tuvalu crafts or its producers. Something written in a brochure will attract buyers. There is also a need to develop a cultural / handicraft centre located in an open space along with the TNCW. These handicrafts can also be exported. Pacifica Festival can be utilized for exporting and selling handicrafts.

Tourism sector should develop awareness of the environmental sector. Integrate climate change issues into tourism planning developing adequate policy and legislation.

Therefore, compared to 2010, tourism sector has improved though it remains underdeveloped, mainly due to intrinsic factors of the country. However, the advocacy made by the Government in the international fora on climate change has increased the visibility of the country abroad.

Trade Policy Framework
The TPF underlines the benefits that tourism can bring to the country in terms of economic growth, development and job creation. It suggests that Tuvalu's best attraction is its pristine environment, smallness and isolation which creates unique features ideal for branding. According to the TPF, there are serious challenges to overcome the lack of tourist infrastructure and high cost of airline services. Cruise ships and yachts present opportunities for further development. The TPF also underscores the need to develop tourism products by incorporating Tuvaluan culture and highlighting the country's attractions such as the World War II relics, King Tides, and impact of climate change.

The TPF makes the following recommendations:

- Improve tourism statistics with regular information on flights, passengers, origin of tourists, purpose of visit, length of stay, etc.
- Promote tourism investment and establish a Tourism Development Fund.

Te Kakeega III
Tourism has a large place in the TKIII as a potential source of growth. The main goal is as stated in the TKIII that "*By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products*". To this end, tourism services will be facilitated through the development and marketing of a Tuvalu ecotourism industry. This objective will be reached through a better access to the country and the implementation of the National Tourism Sector Plan. The potential of the cruise sector is also a target of this strategy. Last, the need for technical and vocational skills for the expected increasing trend of tourism services is also considered key in the achievement of the above mentioned goal.

C.3 Update on Tourism sector

Present state of tourism business
The current size of the Tourism sector in Tuvalu is small, yet the country has unique natural attributes which can be sustainably exploited to harness the potential of tourism for economic growth and development. In addition, the country could leverage i) the increasing demand for unexplored destinations, ii) the potential for niche market with the development of small-scale culturally focussed tourism services, and iii) the recognition of Tuvalu at the international level, including increasing interest regarding the impact of climate change and adaptation strategies by countries such as Tuvalu.

Yet tourism sector is underdeveloped. Yet the country has identified tourism as a trade priority project with high potential. In 2014, the government of Tuvalu formulated the National Tourism Development Strategy (NTDS) in July 2014. The NTDS identifies as core areas: the human resource development; niche market development linked to climate change tourism and cruise sector; enhancement of online

marketing presence; infrastructure development for the setting up of a small marina and recreational activities; improvement of accessibility with an increased capacity and frequency from Fiji Airways; improvement and expansion of a core number of hotel rooms; and the clean-up campaign and special effort towards cleaner environment. Similar priorities arise from the Tourist Survey (2015).

Indeed, access and poor tourism infrastructure are the main challenges for the development of the industry. Infrastructure includes from the airport, to accommodation, to telecommunication and financial services. Tuvalu is a cash economy with no credit cards in use. The privatisation of the largest tourism facility in the country, the state-owned hotel, the Vaiaku Lagi, identified as a priority, has not yet happened. Private initiative is increasing but in a very small scale under the form of guest houses and eco-lodges. The development of the private sector in tourism industry has been highly emphasized in the National Tourism Development Strategy. Indeed, the Tourism department with the support of the Development Bank of Tuvalu and the Business Centre have been helping the private tourist sector to mobilize resources to finance small businesses in the eco-tourism sector. The tourism policy recommends, among others, training in business start-up.

However, the Government of Tuvalu needs to concentrate on addressing the key constraints to the sector's development in terms of basic infrastructure and enabling policy and regulatory environment for the private sector to respond.

In addition, due to the real threat of global warming, there is rise in sea levels and this would mean gradual disappearance of these coral islands. Tourism is an important climate sensitive sector. The biggest threat to tourism industry and the nation as a whole will be progressive rise of sea level which will be 0.5 to 1 meter by the year 2100. With 2°C temperature rise, carbonate reef structure will degrade by 2050-2100 resulting in serious consequences on tourism.

In order to develop tourism niche markets it is important to preserve economic as well as natural capital. Every attempt to protect the Tuvalu coast, the tourist sector should be kept at the centre especially regarding Fongafale. Funafala should is also important as a centre for excellent beaches for tourist entertainment.

The Maritime Conservation Area is the jewel in the crown of Funafuti tourism experience. But information about the Area and the opportunity to visit it is not readily available to tourists. There are no posters or brochures. The council boats costs about AU$ 200/- and there are no life-jackets or other similar lifesaving equipment. Besides, there are no facilities for diving or for renting snorkelling equipment.

C. 4. Tourism related business opportunities

Handicraft and food processing:

A large part of tourism contribution to development arises from its linkages to the local economy through a variety of local products and services offered to tourists.

Tuvalu can improve the value added of its handicrafts by developing a narrative about its history, cultural significant, etc. Addressing the costs of inputs and improving marketing will also contribute to enlarging the market for local handicrafts.

Important linkages can be developed with the local food production but this will take time and targeted interventions to move from the current subsistence agriculture to a minimum of volume and quality that can reliably supply the tourism market.

Skill Training

The Government of Tuvalu plans to support tourism business operators through the incubators model. In addition, the following is proposed:

- Skills development for handicraft SMEs to improve the quality of their products.
- Make use of Tuvalu Maritime Training Institute (TMTI) for training extra courses on "hospitality" management;

Tourist products and services

There is only a very limited range of products and services for tourists.

Initial efforts could concentrate on servicing the cruise segment providing catering and entertainment services based on Tuvaluan cultural heritage like dance, music, local cuisine and small ecotourism.

- Organize excursions to outer islands. This would require organizing regular boat trips to these island but is critical to expand the benefits of tourism beyond the capital city;
- Organize sailing boats for hire, dive shop operations and skiing activity both for tourists and for locals.

Improvement in Tourism infrastructure:

- Develop accommodation with international classification and standard codes.
- Study tours and participation of the local private sector to tourism fairs should be encouraged so as to visit other tourist places and look into type of handicraft produced there;
- Improve air traffic for better connection. Tourists would like to be connected with many countries and would like to enjoy the "freedom" of movement. Many tourists would like to see more than one South Pacific countries and they would like to be directly connected to these countries to enjoy cheaper and straight forward travels; This issue is discussed in the chapter 3 of the present document;
- Improve telephone and internet access to provide constant communication with outside world as discussed in the chapter 2 of the present document.

Advertising, Branding and Marketing Tuvalu Destinations:

- Develop destination marketing with clear brand including target market segments. This is done mainly by institutions like DoT and regional organizations;
- Identify potential private operators to distribute and display commissionable packages with the use of the tourism development fund to be established as per the NTDS;
- Use different sources to provide tourist related information. Such information can be provided through radio, TV, newspapers, bill boards or posters;
- Develop website for tourism in Tuvalu with links to regional websites from SPTO, for instance;
- Provisions of small scale tourism package like "Tuvalu Overview';
- Tuvalu should participate in tourism trade fairs especially in Europe and America.
- Consider branding of the destination leveraging in connection with the rising global awareness of climate change.

C.6. The way forward and recommendations

Improvement of hard infrastructure

Air transport improvement: There is a need to improve air transport in Tuvalu. Most important is to improve air frequency and reduce air ticket fare. Only Fiji Air lands twice a week in Tuvalu. There are no other aircraft landing in Tuvalu. There is a need to increase frequency of passenger airlines and there is need for a reduction of air travel costs. Tuvalu should opt for open-sky policy. More two options are being discussed and are presented in the chapter 3 of the present report.

Construction of a marina for the cruise sector and infrastructure on outer islands: The recent cruise sector development in the Pacific Ocean and diving tourism could be a niche and would not require major investment as the passengers of yachts usually stay aboard at night. It could therefore imply the

development of a small marina supplying and maintaining yachts with catering and entertainment services showcasing the arts, handicrafts and cuisine of the Polynesian culture. For tourism development, outer islands especially Niutao, Nanumaga, Nui, and Nukulaelae need boat harbours for better safety in travel, and speedier loading and unloading of cargo. Equally important is the water management in Funafuti. Some islands also have desalination plants.

Accommodation: It may be difficult for the Government to build extra hotels both in Funafuti and on outer islands. The best alternative is to promote and support the local population on each island to establish few tourist guest houses. These guest houses would allow to host the flow of tourists expected in the next few years. Nevertheless the guest houses should be monitored in terms of standards and hygiene by the Ministry of Health. Guest houses would respond better to the volume of tourists than big resorts in which Tuvalu has no competitive advantage.

Deployment of Tuvalu Maritime Training Institute

Tuvalu Maritime Training Institute (TMTI): This institute has been built in 2015 and started in October of the same year. This institute has been constructed with massive investment. Only 60 students have been sponsored by the government for the long course, on "Integrated Rating".. TMTI also offers short courses on Basic Safety Course – STCW2010, AB Deck – AB Engine, Security Awareness Course, Qualified Steward, and Purse Seine Crew Course. TMTI's revenue is not enough to sustain itself. Addressing financial sustainability issues, the institute may consider introducing other courses like hospitality management, scuba diving, underwater welding, etc. which can support the tourism industry and expand the demand for the institute's services. Such an offer will also change the nature of the institute, however.

Investment and business climate

In order to attract investment, a favourable business climate is a priority. The present investment law states that for foreign investors only own 40 percent of the shares while the Tuvaluans own 60 percent. Given the limited capital available in the local economy, this condition is unrealistic and more discourages foreign investment. Conditions for investment should rather focus on employment and capacity building to be a win-win partnership between the country and the foreign investor.

Financing Tourism related SMEs:

Access to financing for SMEs, including in the tourism sector is limited and expensive in Tuvalu. The Development Bank offers loans for an interest rate of 9 percent which is high for the SME operators. With support from donors, the government started introducing pilot SME Voucher Scheme where SME obtain assistance and advice from consultants and experts. This scheme is useful by combining access to finance with capacity development to businesses. There is a need however, to undertake a detailed assessment of the programme to evaluate the non-financial support component to SMEs to undertake adjustment and ensure this component remains relevant and contribute to the sustainability of businesses.

Creative Industries

In Tuvalu where resources are limited with limited job opportunities, creative industries can work better. Creative industries are supply / value-added chains of creation, production and distribution of goods and services that utilize creativity and intellectual capital as primary inputs. They constitute a set of knowledge-based activities focussed on but not restricted to arts only. They comprise tangible products and intangible intellectual and artistic services with creative content that can be broken down into cultural heritage, arts, media and functional creations.

Promotion of sea sports

A yacht club with the provision of services and activities such as scooters, water skiing, scuba diving and fishing activities could help enhance the provision of tourists' services.

Development of tourist products

Use of postage stamps: Tuvalu has variety of attractive postage stamps but do not target the potential niche market interested in natural beauties but also historical events and cultural symbols. Stamps can also be made on demand for events such as wedding, new year etc. International community should be able to see Tuvalu and its history through stamps.

Handicraft from scrap iron: There are some scrap irons like vehicle bodies which can be utilized for making objects out of scrap iron. It is possible to cut and weld iron pieces into animals, birds, humans, etc. to be kept outside the house, in gardens, at seashore, in islands, etc.

Textile hand printing: The SMEs and tourist industry should get basic training in screen printing, tie & dye, and boutique painting. Screen hand prints can have big markets depending upon design and colours. Design should be about colourful fish and corals, boats and flowers, yachts and coconut trees. Funny written designs can also improve the market. Screen printing can be mixed with printing by brush to improve the looks of the T-shirts. The Villa Hand Prints of Vanuatu are a good example. Tuvalu could import cotton clothes from USA, print in these materials and then export back to USA which would import them without duties because value added includes prints and the origin of the cloth which is USA. Thus, Tuvalu handprints can have 100 percent exportable value because it has clothes from USA with local added-value.

Paintings: Very often, oil paint colours can be very attractive for tourists. Also, equally good and marketable are sand paintings. In East Africa, people make banana painting.

Monitoring and Evaluation

Conduct Monitoring and Evaluation on tourism sector on regular basis.

D. Labour Mobility

D.1. Introduction

Employment is a serious issue in Tuvalu with almost 40% (2012) of the labour force unemployed, especially the young population. The unemployment rate on the outer islands is about 46%. Labour opportunities are scarce and most of the jobs are concentrated in the public administration with the government employing about 66% of the labour force.

By tradition, Tuvaluans have been working as seafarers on merchant ships all over the world providing remittances to their families back home. Indeed, remittances have been a major source of revenue for Tuvaluans families. Seafarers' remittances represented over 15% of GDP consistently between 1996 and 2006. However, as a consequence of the financial crisis, the number of seafarers working abroad fell from 400 in 2005 to 100 in 2014, significantly reducing remittances and leading to the return of seafarers back to Tuvalu with limited options for local employment. As member of the International Labour Organization since 2008, Tuvalu ratified the Maritime Labour Convention which entered into force in 2013. The Convention is based on the tripartite Government, the Tuvalu Seafarers Association and TNPSO and is aimed at protecting employment of the Tuvaluan seafarers. As mentioned earlier, there is no Tuvaluan seafarer on the fishing vessels present on the Tuvalu's EEZs. Therefore, this issue has become a priority.

There are a number of institutions that manage migration of seafarers in Tuvalu. The Tuvaluan Overseas Seafarers Union (TOSU) is a member of International Transport Workers Federation (ITF) which protects workers' rights and improves working conditions for seafarers. TOSU ensures that contracts are in line with ITF agreements. TOSU can intervene in case of any dispute between seafarers and employers including late payments, illness, injury and repatriation of workers. Every seafarer should become a member of TOSU. Skills development will be of utmost importance to maximise crew

employment. It is estimated that a mere 10 percent employment in the fishing vessels could lead to employment of nearly 900 Tuvaluans making or close to 45 percent of the current domestic workforce.

There are several labour migration schemes which allow Tuvaluans to acquire skills and find employment on temporary and long-term basis. These mechanisms developed by New Zealand and Australia provide opportunity for Pacific Islands to solve supply constraints on the labour market. Tuvalu, given its structural constraints, related to geography, remoteness, smallness and limited opportunities is eligible to such programmes.

The main mechanisms in place are the following:
New Zealand labour schemes: The *Pacific Access Scheme* grants permanent residency in New Zealand for about 75 Tuvaluans per year. However, Tuvaluans applying to this scheme should secure a job offer before obtaining the permit and most are unable to do so due to the lack of transport, information and communication and their geographical distance from New Zealand. , The *Recognized Seasonal Employer (RSE) Scheme* provides access to temporary jobs in New Zealand. A small number of Tuvaluans have benefited from this scheme though the number is very low compared to other countries from the region: 54 in 2010; 51 in 2011; 56 in 2012 and 71 in 2013. This is partly explained by the increasing competition of better skilled staff from countries such as Fiji and Vanuatu. Last, the Government of New Zealand has recently set up the Fisheries Pilot (NZ) Initiative for Tuvalu and Kiribati and the Micro State Schemes. These schemes were negotiated under the PACER Plus.
Australia labour schemes: the *Seasonal Worker Program* (SWP) which focuses on agriculture and hospitality sectors has recruited so far 27 Tuvaluans on temporary basis.

D.2. Policy coherence and mainstreaming

The DTIS 2010 Implementation
The DTIS 2010 recommended the evaluation of the existing labour mobility schemes and the impact on the livelihoods and employment of the beneficiaries of these schemes. It also recommended a special focus on education and vocational training to acquire skills and better position the Tuvaluans in the labour market. Last it recommended the identification of new labour market overseas besides horticulture, adult care and hospitality management.

In 2016, the situation has not improved much and the number of Tuvaluans benefiting from the labour mobility schemes is still low as they cannot compete with better educated and skilled migrants from the other PICs. Education and vocational trainings remain therefore a priority in Tuvalu.

Trade Policy Framework
As stated in the Trade Policy Framework, labour mobility is considered to be an opportunity for hundreds of young Tuvaluans. The TPF recommends that an international shipping expert is recruited to prepare comprehensive strategy and action plan for the seafaring sector including looking at markets, preparation of marketing plans, and identification of required trainings to ensure the recruitment of Tuvaluan seafarers on the vessels.

The regional approach is also recommended in the TPF by coordinating standards of trainings and facilitate sharing of experiences and networks in labour markets among the PICs. The regional organisations should also remove barriers imposed on labour movement across the region.

The TPF suggests working with Australia and New Zealand to identify and address the bottlenecks that don’t allow Tuvaluans to benefit from these countries’ labour mobility schemes. Last, it underscores that the Department of Labour should be strengthened and staffed adequately so as to respond to the needs of the population willing to migrate.

Te Kakeega III
In the TK III, labour mobility is described under the section 6.7 on overseas employment. 600 Tuvaluans work abroad and greatly improve the conditions of living of the families remaining in Tuvalu. The TKIII recommends a better preparation and improvement of the reputation of the Tuvaluans so as to facilitate their successful integration into the labour mobility schemes. The TKIII also states the need for linkages between the labour mobility schemes and the education sector in Tuvalu with the inclusion of certification and standards accepted regionally. Last, the TKIII recommends the need for the implementation of planned and well-managed migration policies in order to facilitate orderly, safe, regular and responsible migration and mobility of people.

In addition, climate change increases the pressure on labour mobility. Therefore, the Government of Tuvalu sets out the following actions related to migration in the Tuvalu National Strategic Action Plan for Climate Change and Disaster Risk Management 2012-2016: i) Conducting research and information gathering and providing recommendations for available opportunities under Pacific Access Category (PAC), ii) Exploring access to similar other migration schemes and expansion of existing migration schemes and iii) Establishing training programmes which are required both in Tuvalu and in external markets.

D.3. Update on Labour mobility

Unemployment, Law Reform and Labour Mobility
The government of Tuvalu has initiated the Labour Law Reform with the support of ILO. The objective was to review and update the Employment Act, Industrial Relations Code and Trade Unions Act, to identify new priorities and labour opportunities and develop new labour legislation to better comply with the ILO's Labour Conventions. An ILO-UNDP joint project on Labour Migration and Mobility was also developed to improve labour migration data collection for the purpose of policymaking and to increase the participation of Tuvaluans in the existing labour migration schemes, i.e., the seafaring and seasonal worker programs. An EU project, implemented by ESCAP and ILO, on the Pacific Climate Change and Migration (PCCM) complements the Labour Migration and Mobility project.

In August 2015, Tuvalu Cabinet approved Tuvalu National Labour Migration Policy (NLMP) and Action Plan. The long term vision of the National Labour Migration Policy is to provide Tuvaluans with increased opportunities to circulate and migrate for overseas employment. The stated objectives of the policy are as follows: i) arrange for Tuvaluans' movement as migrants overseas by promoting opportunities for employment abroad, ii) improve competitiveness of Tuvaluans for employment in the global market, iii) maximize benefits of migration by the productive use of savings and remittances in the local economy, iv) involve all stakeholders in smooth labour migration and their protection and v) involve government on the management of labour migration. While protecting migrant workers, attention should be given in areas of safe recruitment of workers, preparation of workers before their departure by providing pre-departure and reintegration training and the provision of support services abroad.

The policy takes a comprehensive and integrated approach where supply side factors such as labour market constraints and training skills are seen in tandem with the demand side factors. The policy outlines actions by government and NGOs to better structure and expand opportunities for decent work abroad while protecting migrants' rights.

National Training Strategy for Migration and Development
Education in Tuvalu has achieved most of its TK2 goals by trying to equip the people with knowledge, skills and self-reliance. Result was improvement of quality of teaching and education standards. The efforts in improving the training of teachers and equipping schools with better curriculum, facilities and supplies allowed to raise the level of quality education especially in primary and secondary education.

There was also expansion and improvement in technical and vocational training. As a result, performances of students at national and international examinations increased. The total school enrolments has reached more than 3,300 per year on average. Students performed well in the South Pacific Form Seven Certificate (SPFSC). The performance of students during Tuvalu Senior Secondary Certificate (TSSC) was average.

There is a need to introduce technical subjects at school so that when students graduate, they have technical knowledge which will enable them to seek jobs abroad. The Tuvalu Maritime Training Institute provides technical training of seafarers. At present, nearly 120 seafarers are working overseas in merchant ships. There is a need to introduce more courses and expand student intake. Technical Trade training is provided by Fiji National University (FNU). Doctors and nurses are trained in Fiji in FNU, Cuba and Taiwan.

However, there is need for a Human Resource Plan in Tuvalu to prepare and manage the human capacity of the country. Human resource flows in and out of labour force are not tracked.

At macroeconomic level, the increase of remittances plays important role in the development of economies within Tuvalu where the migrants' remittances generate much needed foreign exchange. In 2014, the remittances represented 10.6 percent of GDP[73]. For developing countries like Tuvalu, chronic trade deficit, migrants' earnings constitute the major means of financing the gap. Besides, the generation of foreign exchange would enable recipient countries to import capital goods from world markets for development. Remittances can also provide a coping mechanism in front of natural disasters affecting Tuvalu and the families staying in the country. Some experiences of removal of fees on money transfer during the cyclone in Fiji in March 2016 or the typhoon in the Philippines in 2013 are worth mentioning in the context of Tuvalu highly vulnerable to natural disasters.

D.4. The way forward and recommendations

As far as domestic employment and migration are concerned, Tuvalu is a unique case. Australia and New Zealand provide preferential access to Tuvaluan migration. This migration is based on the fact that if population continues to expand, migration is only alternative to avoid spiralling into unemployment and poverty.

Some suggestions for Australian and New Zealand governments are:

- Design special quota for seasonal worker programs for Tuvaluans or longer contracts of upto12 months working across several farms;
- Plan for a quota system for permanent residence for Tuvaluans;
- Assist Tuvalu in identifying new labour opportunities;
- Help Tuvalu women to identify decent work opportunities abroad like hospitality and health care industry;
- Ensure the matching between the skills acquired by Tuvalu graduates from the regional universities and training institutes with the required skills for the labour mobility schemes.

Training workers and potential migrants

- Define skill gaps based on existing labour market opportunities
- Expand training activities of Tuvalu Maritime Training Institute so that it can provide specialized training for seafarers and cover other sectors such as skills for hospitality management and catering. The institute should expand so that it can admit students from outer islands improve standards of training
- Strengthen Technical and Vocational Training.

[73] World Bank Group, Migration and Development Brief, April 2016

- Allow Tuvaluans to take the Australian-Pacific Technical College (APTC) certificate in aged care and other certificates in Tuvalu, so as to ensure labour opportunities for the migrant workers in the region.

Recruitment and Migration

- There is no specific legislation relating to the recruitment, employment and regulation of Tuvaluans abroad. The government should put specific legislation to protect migrant rights and clarify responsibilities of government entities, recruitment agencies and other actors.
- Provide workers with all the information needed regarding their working conditions and insurance schemes prior to departure to guarantee a successful migration.
- Marketing Tuvaluan workers abroad by appointing senior official with MFATTEL to coordinate new and upcoming markets for workers.
- Increase coordination between government ministries and private sector on the identification of new labour markets for Tuvaluan migrants.
- Identify new labour mobility schemes besides Australia and New Zealand.
- Provide support services to returning migrants.

Monitoring and Evaluation

- Conduct Monitoring and Evaluation analysis of the labour mobility schemes and other labour programmes on regular basis.

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E. Recommendations and the way forward

All the Pacific Islands, including Tuvalu are known by small population, archipelagic dispersion, geographical isolation and climatic change. All these characteristics may slow down their integration into regional and global trading systems. Tuvalu is highly vulnerable to climate change and sea level rise. Climate change has resulted into the rise in land and ocean temperature. With limited rain, high temperature brings stress on plants and trees. There is also acidification of ocean due to the rise in carbon dioxide. The high temperature and acidification results into bleaching, coral death and lagoon fish extinction. But El Niño and temperature rise results into plentiful and increase of plankton in EEZ. This increase of plankton may result into increase in tuna fish in the ocean. Since there is higher amount of tuna fish in the EEZ, Tuvalu should increase its license fees and negotiate with the fishing vessels to employ up to 20 percent of Tuvaluans.

The sea level has been rising in Tuvalu. This rise of sea level is causing sinking of great areas of land and resulting in soil salination. Since soils have become saline, many fruit trees and food plants cannot grow. This has resulted into the need for diversification of agriculture and the search for saline resistant and sandy soil tolerant varieties.

Foreign Direct Investment should be encouraged to provide manufacturing and service capabilities for both local and foreign markets. An influx of FDI displays investor confidence in the business and geographical climate. In the case of Tuvalu, there are several factors impacting on the level of investment as follows: i) capital availability; ii) competitiveness including low cost skilled labourers; iii) regulatory Framework; iv) both local and foreign markets; and v) openness to regional and international trade with export friendly policies. Measures to facilitate trade are increasingly seen as essential to help countries in promoting trade and benefiting from global value chains. One of the most important aspects of investment and development is to understand which factor influences magnitude of production and consumption distortions, and government revenue that arises from tariff. With these

issues in mind, there has been an attempt to create investment friendly environment including investment policy and one-stop investment centre. State intervention is a reality of international trade, especially in agriculture and fisheries, encompassing a number of trade policy instruments, during the operation of their customs. It is worth questioning merits of policy instruments and their effects. To enter into a foreign market, it is not necessary to possess local raw materials. Most importantly, it is to add value before exporting products.

In the case of agricultural and fish exports, sanitation standards are important and Tuvalu, with donor support and under supervision of certifying laboratories can establish a branch on sanitation standards. Fair competition is also important to increase efficiency in the production, distribution and supply of goods and services.

Labour migration is one of the oldest patterns in Tuvalu. As a seafaring nation, Tuvaluans are familiar with benefits and challenges of working abroad for payment and new skills. Besides, the shrinking of land, reduction of food and population rise has created underemployment. As a result, there has been a rise in migrant workers and to ensure these workers find employment, education and training are key in this migration trend. Tuvalu should provide vocational skills in areas of hospitality management and horticulture to workers and school students. The support of the Department of Labour in the provision of pre-departure advices and on job markets is a priority. Keeping contacts with the migrants helps ensure a smooth and successful migration. Returning workers should also be given counselling on how to invest their savings in Tuvalu.

Chapter 6: Emerging Prospects - Blue Economy/Oceans Economy and Deep Seabed Minerals

A. Introduction

The purpose of this chapter is straightforward. The purpose recognises the very great importance attached by the people of Tuvalu to the Pacific Ocean. In particular the reality that over 99.9 percent of the sovereign territory of Tuvalu inside its Exclusive Economic Zone (EEZ) is ocean. The purpose further recognises that for future sustainable development and opportunity for a pro-poor improvement in livelihoods of the Tuvalu people, the nation at all levels must have a better understanding of the potential of its ocean resources. This chapter provides a focus on one ocean potential resource-deep seabed minerals.

The chapter concludes with six recommendations which are captured in a Roadmap for Implementation as three key issues: i) Capacity Building, ii) Technical Support, and iii) fulfilling its role as a member of the International Seabed Authority. Expected outcomes, milestones and Tuvalu stakeholders and external partners are suggested in the roadmap.

To appreciate the complexity of these and other challenging issues, and the time required to address them, it is of note to be aware of the ongoing work of the International Seabed Authority. In particular, work on the development of the exploitation regulations for deep seabed minerals in The Area and the priority deliverables identified by its Legal and Technical Commission for the coming 12-18 months.[74]

The Big Picture: Blue Economy/Oceans Economy

In the lead up to the Rio+ 20 UN World Conference on Sustainable Development in 2012, Tuvalu along with its neighbours the Pacific Small Island Developing States (PSIDS)[75] promoted the concept of a blue economy in recognition of the importance of the Pacific Ocean in the lives and livelihoods of Pacific islanders. Key elements of this concept of a blue economy were in regard to inclusiveness and balance across all three pillars of sustainable development. In particular was the necessity of a balance between the environment and social pillars of development compared with economic development. This concept of a blue economy for PSIDS was intended to complement green economy and green growth which were being promoted as high level elements of the Conference.

Following Rio, over the past 3 years (2013-2015) including during the formulation of the post-2015 development agenda (2016-2030) Tuvalu and the PSIDS have vigorously promoted the importance of the oceans to future sustainable development of planet Earth. The outcome of this huge effort is embedded in the Sustainable Development Goals (SDGs) that were agreed by world leaders in September 2015, in particular, the SDG14 "Conserve and Sustainably Use the Oceans, Seas and Marine Resources". Whilst the sentiments expressed in the 10 targets of the SDG 14 over the period to 2030 do not specifically mention deep seabed mineral resources, there is an overarching emphasis on the need to increase the knowledge base of the oceans in order to better sustainably use the oceans and their resources within the context of the United Nations Convention on the Law of the Sea (UNCLOS). The Part 11 Agreement of UNCLOS does specifically focus on deep seabed minerals and the establishment and role of the International Seabed Authority.

[74] Decision of the Council of the International Seabed Authority at its 21st Session, July 2015, contained in document ISBA/21/C/21 available at: www.isa.org

[75] The PSIDS include: Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

Others have rallied behind this effort, for example the United Nations Conference on Trade and Development (UNCTAD) with its publication in 2014 "The Oceans Economy: Opportunities and Challenges for Small Island Developing States". Regrettably this publication did not include deep seabed minerals as a potential for moving forward an oceans economy.[76] Most recently there is the Mauritius Declaration on Blue Economy, the outcome of the First Indian Ocean Rim Association (IORA) Ministerial Blue Economy Conference convened in Mauritius 2-3 September 2015. This declaration does recognize seabed minerals as one of the four priorities[77] of the Blue Economy:

- Fisheries and Aquaculture;
- Renewable Energy;
- Seaports and Shipping;
- Offshore Hydrocarbons and Seabed Minerals.

The declaration states that offshore hydrocarbons and seabed minerals were included as targeted "sectors" to foster new business opportunities and attract investment in the Indian Ocean, and should be developed in an environmentally sound manner for the socio-economic benefit of the population.

In his opening keynote address of the IORA Conference, the Prime Minister of Mauritius announced his commitment to developing the "ocean assets of Mauritius into one of the innovative pillars of the economy" through the establishment of a Ministry of Ocean Economy, the establishment of an Exploration Department in his office to develop the offshore hydrocarbon and minerals sector of Mauritius, and a Committee under his chairship to oversee implementation. Mauritius has the fifth largest EEZ of around 2.3million km2 compared with the largest amongst the PSIDS, Kiribati at 3.55million km2. One of the Mauritius Initiatives for 2013 was to look for strategic partners for the exploration and exploitation of its mineral resources indicating clearly that the task of attracting partners has to be part of a long term strategy.[78]

For Tuvalu, it is of note that the new five-year national development plan Te Kakeega III[79] (2016 - 2020) with the theme "Protect and Save Tuvalu" includes Ocean and Seas as one of four new thematic areas compared with the previous two plans (Te Kakeega I and II).

Recommendation 1: As an emerging prospect, Tuvalu has included deep seabed minerals in its new development plan Te Kakeega III to foster new business opportunities and attract investment similar to the language in the IORA Declaration. To support this initiative, the DTIS 2016 includes a modest future work plan to submit for support to the EIF Board.

B. Context and Justification

For Tuvalu, interest in deep seabed minerals is not an emerging issue. The issue is more a desire to examine the economic potential of deep seabed minerals that Tuvalu may have rights to. It is entirely appropriate for Tuvalu to include this in the second 5-year phase of its EIF work programme. Why? i) over time it is likely to require significant resources and partner support; ii) the necessary work (including resource assessment and environmental management planning) is time consuming and will be ongoing for many years; and iii) Tuvalu lacks the human capacity to carry out this work.

[76] UNCTAD/DITC/TED/2014/5: 2014: The Oceans Economy: Opportunities and Challenges for Small Island Developing States.
[77] www.iora.net
[78] To date no deep seabed prospecting/exploration has commenced in the Mauritius EEZ. However, close by in The Area two 15-year programmes of work for exploration for massive sulphides on the Mid-Indian Ocean Ridge were recently awarded by the International Seabed Authority one to India and a second to BGR Germany.
[79] Tuvalu National Development Plan: Te Kakeega III: 3 December 2015 (draft before Cabinet).

Tuvalu's interest in deep seabed minerals goes back to the time of independence for Tuvalu in 1978. Soon after in 1982 Tuvalu joined the then CCOP/SOPAC the Committee for the Coordination of Offshore Prospecting in the South Pacific (the forerunner to the regional organisation SOPAC) with an expressed desire to understand about the potential offshore mineral resources surrounding the islands of Tuvalu. In 1988 the one and only cruise dedicated to exploring the deep seabed mineral potential in Tuvalu waters was carried out as part of the Japan-SOPAC Cooperative Study on Deep Seabed Mineral Resources in the South Pacific, a 20-year programme from1985-2005.

In 2016, Tuvalu's desire to examine the potential that deep seabed minerals can provide is appropriate given the new 15-year (2015-2030) global development agenda underpinned by the Sustainable Development Goals (SDGs) and, in particular, the SDG14 which focuses on oceans.

Given that the EEZ of Tuvalu is over 900,000 km2 compared with only 25km2 of land in nine atoll islands it is very likely that for the future development of Tuvalu sustainable resource use of its ocean space is essential and must diversify beyond the exploitation of fish resources (primarily one species, tuna).

As an essential first step forward, in recent years Tuvalu has been working to determine all its maritime boundaries including its EEZ and successfully negotiate its shared boundaries and tri-points with neighbouring states. This work is now complete and almost ready for submission to the UN Department of Oceans and Law of the Sea (DOALOS), the repository of this data under UNCLOS. Tuvalu is one of the first of the PSIDS to achieve this goal.

As a second step forward, in recent years Tuvalu has expressed interest in the Reserved Areas of The Area (the High Seas or International Waters) under UNCLOS. These Reserved Areas are set aside for developing states and are under the jurisdiction of the International Seabed Authority. Several PSIDS, specifically Nauru, Kiribati, Tonga and Cook Islands, have already pursued this opportunity (see below). Interest in the deep seabed mineral potential of The Area has grown in recent years with the number of exploration contracts increasing from eight in 2011 to 27 in 2016. Of these only six are for Reserved Areas and most of these contracts for 15-year programmes of exploration work are in the Clarion Clipperton Zone (CCZ) of polymetallic manganese nodules. The Clarion Clipperton Zone is in the north-central and eastern Pacific, several hundred kilometres southeast of Hawaii and extending eastwards towards the coast of Mexico.

As a third step forward the Tuvalu Seabed Mineral Resources Act 2014 is now in place. This Act addresses rights and responsibilities in regard to deep seabed mineral resources both in the Tuvalu EEZ and in the Reserved Areas of The Area under the jurisdiction of the International Seabed Authority. Tuvalu is one of the first of the PSIDS to have this legislation in place.

In closing it must be stressed that this is not a short or medium term strategy, it is definitely long time frame. At this stage of Tuvalu's interest it is impossible to estimate when and for how long such an economic activity involving exploitation of deep sea bed minerals may begin and last. However, what is a short to medium term strategy is that it remains crucial for Tuvalu to become better informed.

B.1. Deep Seabed Minerals: Typical Metals

On the deep seabed of the Tuvalu EEZ occur two of the three types of deep seabed minerals, namely the polymetallic manganese nodules and the cobalt rich crusts. There are no massive sulphides.

A simple summary of the three deep seabed minerals types and the typical contained metals of economic interest is provided by the Japan Oil Gas and Metals National Corporation (JOGMEC)[80]. JOGMEC has been researching and surveying for deep seabed minerals for over 30 years (including the 1988 cruise in Tuvalu waters) and continues to do so with a view to responsible exploitation.

The JOGMEC website asserts the greatest unexploited mineral resources on earth are on the deep-sea floor. These include polymetallic manganese nodules; cobalt rich polymetallic manganese crusts that contain nickel, copper, cobalt, and manganese; and hydrothermal deposits (seafloor massive sulphides) that contain copper, lead, zinc, gold and silver. These mineral resources are found in specific areas of the deep seabed. Manganese nodules are half-buried in comparatively flat deep-sea sediment at depths between 4,000-6,000 meters. Cobalt rich manganese crusts cover the slope or top of seamounts like asphalt at depths of 800-2,400 meters. Hydrothermal deposits consist of heavy metal sulphides derived from hot water that vented from the seafloor at a depths of 1,500-3,000 meters.

Manganese nodules are spherical or oval and are 2 centimetres to 15 centimetres in diameter. They consist of ferromanganese oxides, typically accompanied by a considerable amount of nickel, copper and cobalt.

Like manganese nodules, cobalt rich manganese crusts are composed of ferromanganese oxides. The crust covers the bedrock on the slope or top of seamounts with a thickness of several millimeters to tens of centimeters. The average cobalt content of these crusts is commonly three times as great as manganese nodules, and sometimes contain ore-grade platinum.

Hydrothermal deposits consist of sulphide minerals that contain various metals, such as copper, lead, zinc, gold and silver. They are distributed along the spreading centre axes of the deep seabed, in areas such as the East Pacific Rise, the Mid Atlantic Ridge, and the North Fiji Basin in the South Pacific. They are also found in back-arc basins such as the Manus Basin in Papua New Guinea.

Deep seabed mineral resources are a non-renewable resource. Given the very slow rates at which these mineral deposits form (millimetre or so per million years), once the resource is exploited there is no replacement or regeneration.

B.2. Deep Seabed Minerals: The Environment Debate

There is an ongoing debate at all levels (local, national, regional, and global) in regard to the environmental (inclusive of social and cultural) issues associated with the prospect of exploitation of minerals from the deep seabed.

From the Tuvalu perspective it must be stressed, as in Te Kakeega III, that every attempt will be made to ensure sustainable practices that permit resource use for economic gains whilst at the same time protecting environmental and social/cultural values. The Tuvalu Seabed Minerals Act 2014 articulates the measures that Tuvalu will have in place. For other PSIDS actively engaged similar sentiments are shared.

To assist Tuvalu and other PSIDS as necessary there is at the regional level: (i) the "Pacific ACP States Regional and Legislative Regulatory Framework for Deep Sea Minerals Exploration and Exploitation" and; (ii) the "Pacific Islands Regional Environmental Management Framework for Deepsea Minerals Exploration and Exploitation" being finalised (Sept 2015 draft)[81].

[80] www.jogmec.go.jp
[81] Both documents are available on: www.gsd.spc.int/dsm.

Pacific Oceanscape, the successor to the Pacific Regional Ocean Policy adopted by the Pacific Islands Forum Leaders, also promotes the protection of the marine environment whilst at the same time utilising the resources.

At the global level the International Seabed Authority has an "Environmental Management Plan for the Clarion Clipperton Zone" (ISBA/18/C22) which has been in place for nearly four years and is currently being reviewed. It also has "Recommendations for the Guidance of Contractors for the Assessment of possible Environmental Impacts arising from Exploration for Marine Minerals in The Area" issued in 2013 by the Legal and Technical Commission (ISBA/19/LTC/8). In 2011 the Authority released Technical Study 10 "Environmental Management Needs for Exploration and Exploitation of Deep Sea Minerals". The development of the regulatory framework for exploitation currently being developed by the Authority will have extensive provisions to safeguard the environment.[82]

The new global development agenda, in particular the SDG 14, calls for environment protection to be assured during the extraction of marine resources.

Notwithstanding these efforts much doubt remains in the minds of some, especially conservation groups and organisations, which make recommendations as strong as calling for a global moratorium on activities linked to deep seabed minerals.

Typical of those expressing doubt is the Deep Sea Mining Campaign (a consortium of civil society and non-government organisations) that simply believes as follows:[83]

- Local communities should have a say in decisions about whether deep sea mining should go ahead in their waters, and indeed have a right to veto projects.
- Independently verified research must be considered to demonstrate that neither communities nor ecosystems will suffer long term negative impacts prior to permitting mining to commence.

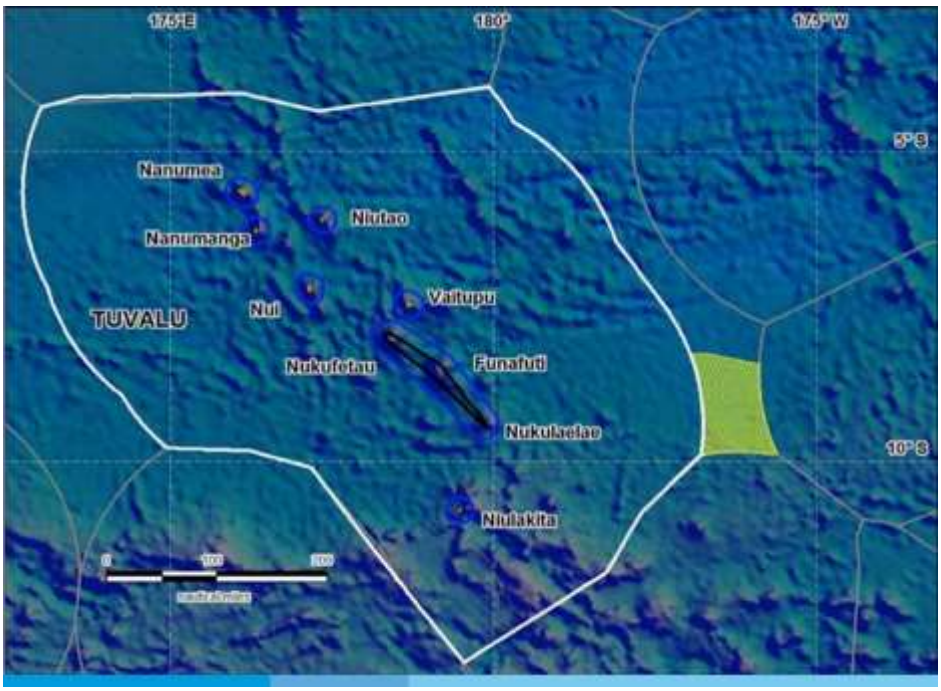
B.3. The Tuvalu Exclusive Economic Zone (EEZ) and Bathymetry (Water Depth)

The Tuvalu EEZ (Figure 6.1) is approximately 900,000km2**.** It is about average size for the 14 PSIDS, seven are larger and six are smaller. Overall the sizes range from 3.55million km2 for the Kiribati EEZ to 120,000km2 for Samoa.

Compared with the land area of 25km2 as the sum total for nine atolls, the EEZ is over 99.9 percent of the sovereign territory of Tuvalu. For only five PSIDS is this percentage less than 99 percent.

Figure 6.1: Tuvalu EEZ showing its nine atolls, declared EEZ boundary (white line) and claim area for extended continental shelf joint with France (in green)

[82] These documents are available on the International Seabed Authority website; www.isa.org
[83] www.deepseaminingoutofourdepth.org



The bathymetry (or water depth) is simple. A northwest to southeast axis of seamounts divides the EEZ. To the west and the east is deep seafloor averaging around 4,000-4500m depth. The southernmost part of the EEZ is relatively shallow water of the Southern Tuvalu Banks. Eight of the seamounts are emergent as the atoll islands from north to south Nanumea, Nanumanga, Niutao, Nui, Vaitupu, Nukufetau, Funafuti, and Nukulaelae), and part of the Tuvalu Banks is emergent as the southernmost atoll island of Niulakita.

Over the past several years Tuvalu has dedicated itself along with other PSIDS and the support of partners to determining all its maritime boundaries including its EEZ boundary. Tuvalu is one of the first PSIDS to complete this work including its shared EEZ boundary treaties with neighbouring states (Fiji, Kiribati, Wallis and Futuna (France)) and the determination of Tripoints. These coordinates and related treaties will all be deposited with DOALOS by mid-2016 following the passage through Parliament of the final data. Included will also be a claim for a small extension (shown in green on the map) under the provisions of the Article 76 of UNCLOS in regard to the continental shelf. If approved this will give Tuvalu ownership of any mineral resources on the deep seabed in this extension area.

B.4. Tuvalu and Deep Seabed Minerals: Institutional and Policy Issues

As already pointed out Tuvalu has had a history of interest in deep seabed minerals since independence in 1978. Shortly after independence in 1982 Tuvalu joined the Committee for the Coordination of Offshore Prospecting in the South Pacific (CCOP/SOPAC). CCOP/SOPAC had been in existence for eight years as a regional initiative of UNDP, to assist seven independent Pacific island countries (Cook Islands, Fiji, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu) carry out work to investigate the deep seabed mineral resources potential within their waters. The development of UNCLOS beginning at this time added impetus to the desire of these countries for this work well-knowing they had little or no national institutional or human capacity to carry out this work.

Tuvalu has benefitted from this regional support which has continued over the years through to present day as the organisation itself evolved from first CCOP/SOPAC then to SOPAC as an independent regional organisation, to now SOPAC as a Division of the Secretariat of the Pacific Community (SPC). In the Pacific Community the number of island member countries is 22 along with Australia, France, New Zealand and the United States of America. Since 2011 the SPC-EU EDF10 Deep Sea Minerals

Project has been the focus of this regional support, but will continue only to the end of 2016. Tuvalu needs to secure ongoing support in this sector.

Tuvalu has until today developed very little national capacity for deep seabed minerals resources assessment. However, two recent institutional developments have taken place to enhance Tuvalu's capacity. First the Ministry of Natural Resources has included the development of deep seabed minerals in its 2014-2016 Corporate Plan. Secondly, in the new five-year Corporate Plan for the Tuvalu Lands and Survey Department, a small Seabed Minerals Unit is proposed with a key result area of deep seabed mineral resources assessment.

At the policy level, in November 2014, the Tuvalu Seabed Mineral Resources Act was passed. The intent of this legislation is not only to guide entities wishing to explore in Tuvalu's EEZ but also partner with Tuvalu as a sponsoring state in The Area under the jurisdiction of the International Seabed Authority. Most recently, in February 2016, a preliminary draft Tuvalu Deep Sea Minerals Policy has been produced by the SPC-EU Deep Sea Minerals Project along with preliminary draft Licensing Regulations.

As a key supporting development Tuvalu has completed all the necessary work on its maritime boundaries required by UNCLOS (see above). This is quite an achievement since Tuvalu only joined the United Nations in 2003.

Recommendation 2: Tuvalu needs in a modest way to begin to develop its national institutional and human capacity to support the interest it has in understanding and realising any potential to sustainably develop deep seabed minerals. Tuvalu also needs to identify new regional or global support mechanism(s) or partnership(s).

B.5.Tuvalu Seabed Minerals Act

Tuvalu was the fourth of the PSIDS after Cook Islands, Fiji and Tonga to enact applicable legislation. The Tuvalu Seabed Minerals Act 2014 has the following responsible authorities: The Tuvalu Seabed Minerals Authority; and the Tuvalu Seabed Minerals Advisory Council. Neither are yet established.

Areas available for deep seabed mineral activities within the Tuvalu EEZ include any area that is not a marine protected area or an area that is reserved by the Tuvalu Seabed Minerals Authority.

The Act also makes provision for Tuvalu to be a sponsoring state in The Area under the jurisdiction of the International Seabed Authority[84]. These provisions include *inter alia* taking all appropriate means to exercise its effective control over sponsored parties seeking to ensure that their seabed mineral activities are carried out in conformity not only with UNCLOS, but also the rules and regulations of the

[84] A distinct feature of the deep seabed mining regime encapsulated in UNCLOS and the Part XI Agreement lies in the requirement that qualified applicants requesting for rights to carry out activities in the Area must be sponsored by States Parties to the Convention on the Law of the Sea. There are two requirements, firstly qualified applicants must be either nationals of a State party or effectively controlled by it or its nationals. Secondly, they must obtain the sponsorship of a State party to the Convention. The certificate of sponsorship is the act that proves the sponsorship. The requirement of sponsorship by a State party applies identically for developing and developed States. This is essential to avoid what the Seabed Disputes Chamber refers to as the risk of sponsorship of convenience. Thus, the obligation to apply a precautionary approach in ensuring effective protection of the marine environment is executed according to the capabilities of sponsoring States. Furthermore, the reference to 'capabilities' is only a broad and imprecise reference to the differences in developed and developing States. What counts in a specific situation is the level of scientific knowledge and technical capability available to a given State in the relevant scientific and technical fields. The Convention places a sponsoring State under an obligation to adopt laws and regulations and to adopt administrative measures that are, within the characteristics of its legal system, appropriate to secure compliance by persons under its jurisdiction and consequently effective regulatory control.

International Seabed Authority and other requirements and standards established by general principles of international law.

Within Tuvalu's EEZ there are three types of permit/licence which may be extended for periods of five years:

- *A Prospecting Permit (15 years):* Allows the holder to search for mineral deposits within Tuvalu's EEZ but does not grant exclusive rights to an area.
- *An Exploration Licence (15 years):* Grants exclusive rights to conduct activities in the licensed area in accordance with the work plan of the licence. There is also a right of retention clause.
- *A Mining Licence (20 years):* Grants exclusive rights to conduct activities within the licensed area in accordance with the work plan of the licence. Any minerals obtained are the property of the licensee. This includes the right to market, process, sell and export. To commence mining the licensee must first obtain endorsement from the Department of the Environment.

The licensee is responsible for their actions within the licensed area. If they fail to comply with the Tuvalu Seabed Minerals Act or if damage occurs they may be liable to pay compensation.

The Tuvalu Seabed Mineral Authority must determine that the applicant is of good standing, having no relevant convictions and not being insolvent. The application will be determined upon the content of the application, advice from ministries and relevant public domain information. There will also be an opportunity for other countries that may be affected to be informed and provide relevant information to be taken into account in the decision-making process and for the public to be informed and provide relevant information.

Adherence to strong social and environmental management practices is a requirement of the Act. For most activities an environmental (including social) impact assessment is required. Also, any activity must comply with the Tuvalu Environmental Protection Act.

Cooperation in training and capacity building of personnel of Tuvalu in connection with seabed mineral activities, and any related transfer of technology as may be agreed is a requirement of the Act.

As part of the licence decision-making procedure community opinion is to be sought and any relevant information they may provide is to be considered.

It is critical that sufficient measures are in place so as to avoid any negative impact on the tuna fishery in Tuvalu waters. This fishery currently secures an income for Tuvalu equivalent to almost 50 percent of the annual budget. Some argue their will be an impact on the tuna fishery from any mineral exploitation. This argument needs to be justified at least during any exploration work period. Irrespective of the outcome, appropriate baseline data gathering and monitoring tools need to be in place well in advance of any exploitation.

Recommendation 3: Capacity building will be needed to ensure there is an enabling environment in which the Tuvalu Seabed Minerals Act can operate effectively. This will require assistance to support the establishment of the Tuvalu Seabed Minerals Authority and the Tuvalu Seabed Minerals Advisory Council and training of members of these bodies to ensure effective operation.

B.6. Tuvalu and Deep Seabed Minerals: Survey Work

As one of Tuvalu's first benefits from being a member of SOPAC, a cruise took place in Tuvalu waters in 1988 as part of the 20 year Japan-SOPAC Cooperative Study on Deep Sea Mineral Resources in the

South Pacific 1985-2005.[85] This 43-day cruise carried out nearly 30 years ago has turned out to be the one and only substantive deep seabed mineral resources assessment to date.

The occurrence of both polymetallic manganese nodules and cobalt rich crusts within the EEZ of Tuvalu was confirmed by the cruise. The resources appear to be relatively well developed in the northeastern part of the EEZ but not to the same extent as they are elsewhere on the deep seabed of the Pacific Ocean for example in: (i) in the EEZ of the Cook Islands and (ii) the Clarion Clipperton Zone in The Area.

"The EEZ of Tuvalu is one of the least surveyed areas in the Pacific islands region in terms of minerals research and assessment."[86] The data presented below on the polymetallic nodule and cobalt rich crust mineral resources are taken from that Information Brochure which is dedicated to Tuvalu.

Manganese Nodules: The inferred manganese nodule resources from the 1988 cruise were 341 million tonnes in an area of 53,000km2 assuming an abundance cut-off of 5kg/m2 (Figure 2). Depth was between 5,200 and 5,600m. Cobalt, nickel and copper resources in the nodules were calculated to be 0.9million tonnes, 1.5million tonnes and 1.2million tonnes respectively.

In particular the following issues were noted.

- The abundance of manganese nodules in the survey area is low with poor continuity. Of the 24 stations sampled, only five showed abundance exceeding 7.5 kg/m^2 and none exceeded 10 kg/m^2.
- The major factors that contribute to this low manganese nodule distribution are considered to be: (i) low biological productivity, (ii) large coverage of seafloor topography by seamounts and knolls, (iii) lack of flat area near the carbonate compensation depth. This depth is that below which calcium carbonate is soluble in seawater and is usually between 4,200 - 4,500m in the Pacific.
- In the study area, siliceous sediments which are indicative of high biological productivity were not observed at all, thus the productivity of micro-organisms which play the role of carrier of metals (for example manganese, nickel, and copper.) to the seafloor is considered to be low.
- The average abundance of the three elements nickel, copper and cobalt calculated from the above is 22.6 g/m^2. A preliminary resource estimate based on the analysis results above yields 2.76 million tonnes of manganese nodules.
- The manganese nodules are generally gravelly and relatively small in size.

Figure 6. 2: Manganese nodule abundances determined during the 1988 Japan-SOPAC cruise

[85] Japan International Cooperation Agency JICA– Metal Mining Agency of Japan MMAJ: 1989: Ocean Resources Investigation in the Sea Area of CCOP/SOPAC Report on the Joint Basic Study for the Development of Resources (Volume 4) Sea Area of Tuvalu.

[86] SPC-EU EDF10 Deep Sea Minerals Project: 2014 Information Brochure 18.

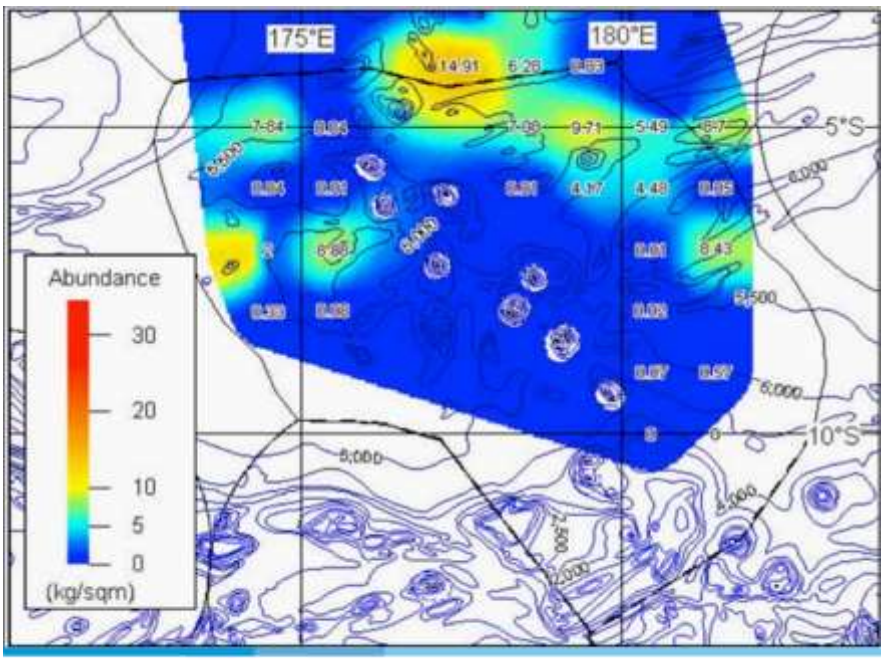


Figure 3: 1988 Tuvalu manganese nodules' abundance map.

Cobalt Rich Crusts: A total of 17.5 million tonnes of inferred crust resources were estimated from the 1988 cruise. Cobalt, nickel and copper resources were estimated to be 116,600 tonnes, 78,300 tonnes, and 13,400 tonnes respectively.

In particular the following issues were noted.

- There are many seamounts and atolls in the waters of Tuvalu but they generally have poor crust coverage and low crust bearing potential and occur at water depths of 1,900 - 2,800m.
- Only one seamount had moderate potential that warrants further assessment even though only four out of twelve sampling points had cobalt rich crusts thicker than 1cm. The survey showed that a large part of the seamount has crust coverage of less than 50 percent.
- In other seamounts and atolls, three contained crusts with average thickness of between 1mm and 1cm.

Recommendation 4: Recruit a consultant to review the nodule resource data available using a predictive model based on a geological model to account for nodule grade and abundance variability worked out in the Penrhyn Basin to the east and which was used and refined by the International Seabed Authority in its geological model of the Clarion Clipperton Zone. (The International Seabed Authority could not do this review as the work required is inside the EEZ of Tuvalu). Basically the model uses parameters on which nodule variability depends such as biological productivity, sea floor depth relative to the carbonate compensation depth, sedimentation type and rate, turbidite activity, to predict if any nodules are likely to be present in an unsurveyed area, and, if so, their likely nature. This approach can also value from data in nearby areas. Should this approach indicate that there were favourable and widespread areas for nodules in the Tuvalu EEZ, then a new cruise would certainly be worthy of consideration.

C. A Brief Regional Overview of Deep Seabed Minerals

This brief commentary excludes the PSIDS interests in The Area. These are discussed in the section below on the International Seabed Authority.

Advanced activity is being undertaken in the EEZs of Papua New Guinea, Cook Islands and Tonga. Active prospecting/exploration is being undertaken is several other PSIDS (refer table below).

All PSIDS have had marine scientific research and/or deep seabed mineral assessment cruises carried out in their EEZs over the past 40 years. Most of these with support from the SOPAC Japan 20-year cruise programme, but many others have been involved from institutions in Australia, France, Germany, Korea, New Zealand, Russia, and United States of America.

A recent assessment commissioned by the SPC-EU Deep Sea Minerals Project of the costs and benefits of exploitation of deep seabed minerals in the Pacific islands region describes a preliminary economic analysis based on realistic yet hypothetical mining scenarios developed for three mineral deposits (SPC Report 00035, January 2016)[87]: i) Seafloor massive sulphide deposits in Papua New Guinea; ii) Polymetallic manganese nodules in the Cook Islands; and iii) Ferromanganese cobalt rich crusts in the Marshall Islands.

In each country, costs and benefits were assessed from the perspective of citizens of the host country and based on the operation of a single mine site. To the extent possible, costs and benefits were quantified and monetised in order to estimate the net social benefit to the people of the host country. Where costs and benefits could not be monetised, they were identified and discussed qualitatively.

The analysis suggests that deep seabed mineral exploitation in both Papua New Guinea and the Cook Islands have the potential to make the citizens of the host country better off. In contrast, given current technology and market conditions, the benefits associated with deep seabed mineral exploitation in the Marshall Islands are unlikely to exceed the costs. The results also indicate modest employment and income effects relative to potential annual royalties. It is clear from this report there are significant uncertainties associated with sparse data and that there is a critical need for case-by-case studies. Should Tuvalu decide to progress its interest in deep seabed minerals, in due course Tuvalu will need to be ready with adequate national capacity to assess such studies.

C.1.Papua New Guinea

The following is from a fact sheet on the Nautilus Minerals webpage.[88] The Solwara 1 deposit in the Manus Basin within the EEZ of Papua New Guinea, sits on the seafloor at a water depth of some 1600m. It boasts a copper grade of approximately 7 percent, which compares with land-based copper mines where the grade today averages 0.6 percent. In addition gold grades of well over 20 grams per tonne have been recorded with an average of around six grams per tonne.

Nautilus Minerals a Canadian company was granted the first mining license in January 2011 for the deposits at Solwara 1.The environmental permit was awarded in December 2009. Commencement of seafloor operations is anticipated in early 2018.

Over the next two years Nautilus will complete the development of a production system using existing technology adapted from the offshore oil and gas industry, as well as dredging and mining industries to enable the extraction of these high grade seafloor massive sulphides on a commercial scale:

- Seafloor Production Tools: delivery due end of 2015;
- Launch and Recovery System: delivery due late 2015 early 2016;
- Riser and Lifting System including Subsea Slurry Lift Pump: delivery due first half of 2016;
- Production Support Vessel: delivery due end 2017.

[87] Report title: "An Assessment of the Costs and Benefits of Mining Deep-Sea Minerals in the Pacific Island Region."
[88] www.nautilusminerals.com.

There has been a good deal of negative publicity about this project from civil society at all levels (local, national, regional and global) from both environment and social perspectives. The publicity has called not only for a ban on this project but also a global moratorium on seabed mineral exploration. The company asserts it has done extensive work to demonstrate the publicity is not well-founded and the project will in fact do less harm than existing on-land mines.[89] It also asserts it is committed to being responsible environmentally and safe as well as community accountable.[90]

C.2. Cook Islands

The Cook Islands National Seabed Minerals Policy (2014) suggests there may be as much as 10 billion tonnes of polymetallic manganese nodules spread over more than one third (750,000 km2) of the EEZ which is approximately 1.8m km2 in total. The resource zone extends north –south through the EEZ, particularly in the southern half.

Cook Islands has a Seabed Minerals Act (2009) with a Seabed Mineral (Amendment) Act of 2015.

The grades in the nodules are rich but variable from north to south as are the estimated tonnages (Table 1). A comparison with the Clarion Clipperton Zone shows both similarities (for example contained metals) and differences (for example in mean metal composition). A recent summary resource estimation (in millions tonnes) was conducted by Cronan (2013)[91].

Table 6. 1: Summary of the Cook Islands manganese nodule resources by geographic area of the EEZ from north to south (Cronan 2013)

Location	Total	Cobalt	Nickel	Copper	Titanium	Manganese
North Penrhyn Basin	616.08	1.66	3.39	1.91	6.90	123.22
South Penrhyn Basin	2,831.95	13.59	7.93	4.53	32.28	424.79
Manhiki Plateau	691.60	2.28	2.70	1.45	7.40	117.57
Southern Cook Islands	6,126.55	25.73	22.06	9.80	117.63	1,225.31
Total	**10,266.18**	**43.27**	**36.07**	**17.69**	**164.21**	**1,890.89**

In August 2015 Cook Islands Seabed Minerals Authority commenced a seabed minerals tender process which invited companies to take part in a competitive tender for the exploration of polymetallic nodules within the Cook Islands EEZ.

The principal object of the tender consistent with the Act was to initiate exploration activities that will ultimately result in the commercial recovery of seabed minerals in a manner that secures the sustainable economic development of the Cook Islands while meeting the country's expectations concerning the preservation of the culture and protection of the environment.
Ten areas each approximately 11,000km2 (1degree latitude x 1 degree longitude) are available based upon estimated mineral content and value. An exploration license is valid for five years renewable upon application.[92]

[89] Earth Economics Report: 2015: Environmental and Social Benchmarking Analysis of the Nautilus Minerals Inc. Solwara 1 Project.
[90] (www. cares.nautilusminerals.com).
[91] Cook Islands Seabed Minerals Authority Report 1: 2013: The Distribution, Abundance, Composition, and Resource Potential of the Manganese Nodules in the Cook Islands Exclusive Economic Zone.
[92] The tender document package cost can be reimbursed against a renewal of license fee. The costs involved are summarised as follows: purchase of tender document data package (NZ$25,000); Application Fee (NZ$50,000); Fee paid on grant of license (NZ$100,000); and Annual Fee (NZ$75,000).

A press release by the Cook Islands Seabed Minerals Authority on February 19th, 2016, indicated there had been no formal applications although there had been serious expressions of interest from entities in China, Germany, Japan, Korea, the United Kingdom and the United States. The release further informed "that the lack of applications at this time may not be an entirely bad result, as the Cook Islands has been taking a 'steady as she goes' approach. This enforced delay will allow time for more review of the regulatory framework, ongoing capacity-building, promotion, consultation and time to see how the deep sea mineral exploration is progressing in other nations and in international waters."

C.3. Tonga

For the past 40 years resource assessment cruises have taken place in the EEZ of Tonga. Initially the focus was on the potential for polymetallic nodules and hydrocarbons. But for the past 20 years the focus has been on seafloor massive sulphide deposits in the Lau Basin.

In 2008 Nautilus Minerals Tonga conducted the first commercial deep seafloor mineral resources exploration programme in Tonga waters. Exploration work to date has been very successful and has resulted in the identification of 19 highly prospective massive sulphide sites that are ready for further evaluation.
Since 2011 the Korean Ocean Research and Development Institute (KORDI) now the Korean Institute of Ocean Science and Technology (KOIST) has also been carrying out exploration work on seafloor massive sulphides in the Lau Basin within the EEZ of Tonga.

C.4. Other PSIDS with Deep Seabed Minerals Interests in their EEZ

Other PSIDS with Deep Seabed Minerals Interests in their EEZ are summarised in Table 6.2.

Table 6. 2: Other PSIDS with deep seabed minerals interests

Federated States of Micronesia	Considered to have potential for cobalt rich crusts, and the possibility of finding seafloor massive sulphide deposits. Has been approached by Bluewater Metals.
Fiji	Discovery of hydrothermal vents in the Lau Basin in 1982 led to major seafloor massive sulphide prospecting interest shown by investors. Exploration licences within the Fiji EEZ issued to both KORDI/KOIST and Nautilus Minerals.
Kiribati	Nautilus has approached Kiribati for exploration in its EEZ (some areas will fall within the Phoenix Islands Protection Zone), however Kiribati is set to establish a no fish zone and exploration with their US Partners.
Marshall Islands	Seamounts in the western part of the EEZ have significant cobalt rich crust potential. No licenses issued to date.
Solomon Islands	Surveys conducted in Solomon Islands over the 30-40 years identified hydrothermal vent systems with potential for seafloor massive sulphide deposits. There are 90 offshore exploration licences issued within the EEZ to Nautilus and Bluewater Metals.
Vanuatu	Surveys conducted in Vanuatu over the past 30-40 years identified hydrothermal vent systems and hence potential seafloor massive sulphide deposits. Prospecting licences issued with 41 held by Nautilus Minerals and 113 are held by Bismarck Corporation (Vanuatu) Ltd.

C.5. SPC-EU Deep Sea Minerals Project

This Project formerly the SOPAC-EU Deep Sea Minerals Project is a regional project established in 2011 to assist Pacific island countries to improve governance and management of their deep sea mineral occurrences in accordance with international law, with particular attention to the protection of the marine environment and securing equitable financial arrangements for the countries and their people. Several of its publications are referenced in this report.

A particularly useful piece of work completed by the Project was to work with UNEP/GRID-Arendal to complete a state of knowledge assessment of Pacific marine minerals.[93] This work could be used as resource material for Tuvalu national capacity building activities both at the grass roots and government staff levels.

The Project will conclude with no foreseeable successor in 2017. Tuvalu like other PSIDS will have to look elsewhere for the valuable support the project has provided in particular to supplement the lack of national capacity.

C.6. UNCLOS and the International Seabed Authority

Tuvalu is a signatory to UNCLOS and its Part 11 Agreement. The Part 11 Agreement of UNCLOS deals with the issues relating to seabed minerals including the establishment and operation of the International Seabed Authority.

A principal aim of the Authority is to regulate deep seabed minerals activity and to give special emphasis to ensuring the marine environment is protected from any harmful effects which may arise from exploration or exploitation.

Tuvalu maintains its formal contact with the Authority through its Mission at UN Headquarters in New York. In recent years Tuvalu along with an increasing number of delegates from other PSIDS has been attending the annual meetings of the Authority in Kingston, Jamaica in July.

Recommendation 5: Tuvalu should continue to develop and strengthen its links with the International Seabed Authority and seek to engage fully whenever possible with the work of the Authority.

Within the Pacific Ocean, the main part of The Area under the jurisdiction of the Authority that has long been of interest in regard to seabed minerals is the Clarion Clipperton Zone. It is a large area around 6million km2, of known occurrence of polymetallic manganese nodules. Typical metal contents are: copper 0.69 percent, nickel 1.02 percent, cobalt 0.29 percent, manganese 23.9 percent, and iron 10.9 percent.[94] Currently there are 27 contracts for 15-year programmes of work for exploration each covering an area up to 75,000km2.

The Part 11 of UNCLOS, and the 1994 Agreement relating to the implementation of Part 11, and the regulations for exploration of polymetallic nodules establish the "Reserved Areas" which are set aside for applications from entities sponsored by developing states. To date there are six Reserved Areas in the Clarion Clipperton Zone which are subject to programmes of work for entities sponsored by developing states that have been approved by the Authority. Four of these sponsoring states are PSIDS (Table 6.3).

[93] Available on the Project website: www.gsm.spc.int/dsm.
[94] Wang X, et al: 2008: Biogenic Origin of Polymetallic Nodules from the Clarion Clipperton Zone in the Eastern Pacific Ocean: Electron Microscope and EDX Evidence. Springer Science

Table 6. 3: Developing countries (including PSIDS) as sponsoring states in the Clarion-Clipperton Zone.

Developing State	Sponsored Entity	Approval
Nauru	Nauru Ocean Resources Incorporated (NORI)	2011
Tonga	Tonga Offshore Mining Limited (TOML)	2011
Kiribati	Marawa Research and Exploration Ltd	2013
Cook Islands	Cook Islands Investment Corporation (CIIC)	2014
Singapore	Ocean Mineral Singapore Pte Ltd (OMS)	2014
China	China MinMetals	2015

Note: CIIC and China MinMetals contracts yet to be signed

Tuvalu has expressed an interest to become a sponsoring state within the context of the Reserved Areas of the Clarion Clipperton Zone. As mentioned above Tuvalu has made provisions for its responsibilities as a sponsoring state in The Area in its Seabed Minerals Act.

Recommendation 6: Tuvalu can be encouraged to continue its efforts to become a sponsoring state of an entity with a contract for a 15-year programme of work for exploration for polymetallic nodules in a Reserved Area of the Clarion Clipperton Zone. At the same time Tuvalu needs to develop and strengthen its national capacity to fulfil its role as a sponsoring state.

D. Polymetallic Manganese Nodules: Global Metal Market Issues

Tuvalu will be a sponsoring state. As a sponsoring state either of work within its EEZ or in the Clarion Clipperton Zone of The Area, Tuvalu will not be directly impacted by the global metal market issues, however Tuvalu will most certainly be impacted indirectly. These global metal market issues of necessity will be addressed by the entity that carries out any work. Of particular concern at this time for Tuvalu is the minimal national human technical capacity to understand these issues. There is almost an entire dependence on external consultants.

For Tuvalu, of particular interest in deep seabed minerals are the polymetallic manganese nodules. The following is a very brief commentary of global market issues for the key metals in the nodules. The brief commentary is intended to highlight just some of the challenges sponsoring states like Tuvalu will have to pay much attention to.

In the nodules the key metals of interest are nickel, copper and cobalt. Manganese is also included since it is present in significant quantity in the residue after recovering the other metals.

In recent years the occurrence of rare earth elements (REEs) in the nodules has received global attention. These elements/metals are high-priced and vital to the manufacturing of goods in the information and communication technology industry that for increasing numbers of the world population dominates much of day-to-day life today. China has been the major world producer with over 95 percent of world production. It has restricted export prompting alternate sources to be found with the reopening of mines in the USA and likely new mines soon in Australia. An advantage of a deep seabed source for these REEs is that they are not bound with radioactive hosts like their onland equivalents so there is no radiation contamination issue with processing and the residue.

In a recent review[95] of deep seabed mineral deposits as a source of critical metals for use in high and green technology application, examples from several sources were summarised as follows.

- A cell phone is on average 25 percent metal; with approximately 1.5 billion cell phones sold in 2010 about 60 kg of tantalum, 510 kg of platinum, 22.5 tonnes of palladium, 51 tonnes of gold, 525 tonnes of silver and 24,000 tonnes of copper were used in cell phone production in one year.
- Giant wind turbines can each contain two-tonne magnets that include 255–320 kg of neodymium. Wind turbines also contain significant amounts of dysprosium, praseodymium, samarium, cobalt, and rhenium.
- A hybrid car contains many REEs required for its production; for example in the batteries, electric motors and generators, additives in fuel, glass, mirrors and LCD screens.

Table 6. 4: Key metals in manganese nodules, their use, current market supply and recent prices[96]

Metal	Use/Demand	Current Supply and known Reserves	Price in Jan 2010 (US$/pound)	Price in Jan 2016 (US$/pound)
Nickel	Stainless steel and super alloys; Rechargeable batteries	Russia Fed. Indonesia Philippines Canada Australia New Caledonia	12.0	3.9
Copper	Wide range of domestic, industrial and high tech use as a metal; also as an alloy	Chile USA China Peru	4.2	2.0
Cobalt	Corrosion resistant very high temp alloy; Rechargeable batteries in mobile phones	DRCongo ++ Zambia Canada Australia China	20.0	10.9
Manganese	Industrial metal additive in steel and nonferrous alloys	South Africa China Australia	0.7	1.2
REEs (Rare Earth Elements)	Extensive: particularly in modern communications systems and automobile industry	China USA	Variable depending on the element/metal	Variable depending on the element/metal

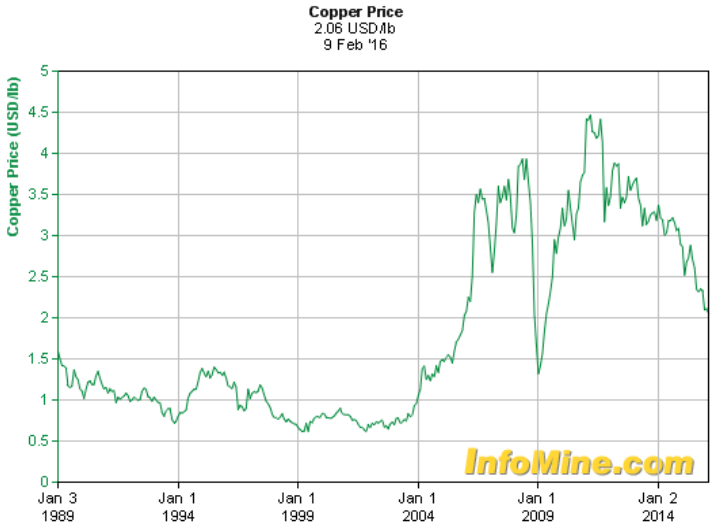
The world metal prices for the three key metals are well known for their volatility which makes it particularly difficult to manage the risk attached to the very large sums of investment required in what is the long term development of a new industry like deep seabed mining.

Figure 3 demonstrates the volatility in the price of copper over the past 25 years. Price fluctuated around US$1 per pound from 1990 through 2005. Price rose sharply to nearly US$4 per pound by 2008 and peaked at nearly US$4.50 per pound in 2012. In the past 3 years price has dropped back to US$2 per pound.

[95] J.R. Hein, K. Mizell, A. Koschinsky, T. A. Conrad 2013: Deep-ocean mineral deposits as a source of critical metals for high- and green-technology applications: comparison with land-based resources. Ore Geology Reviews 51 pp1-15.

[96] Sources: ISA Technical Study 11; 2013: Towards the Development of a Regulatory Framework for Polymetallic Nodule Exploitation in The Area and ISA Briefing Paper 02/12; 2012: Prospects for Rare Earth Elements from Marine Minerals. Prices: Rounded from graphs on www.infomine.com

Figure 6. 3: Trend in global price of copper over the past 25 years[97]



In the recent past, the International Seabed Authority commissioned a technical study (ISA Technical Study 11) entitled "Towards the Development of a Regulatory Framework for Polymetallic Nodule Exploitation in The Area". The study provides a timely overview of the world market issues (such as demand, supply, price volatility over recent decades, risks and economic sensitivity analysis) of the key metals nickel, copper and cobalt together with manganese. These world market issues of the key metals in the nodules are by enlarge relevant irrespective of the geographic location of the nodules, either under national jurisdiction or under international jurisdiction of the International Seabed Authority.

The first nodules were raised in bulk from the deep seabed of the Clarion Clipperton Zone in the late 1970s. This work did not continue. Following a period of low metal prices there was a resurgence in price as a result of global demand in the first years (decade or so) of the 21st century. This manifested itself for example in the increase in number of contracts for programmes of work granted by the International Seabed Authority. That number has increased from eight in 2011 to 27 in 2016. Most of these contracts are for exploration for polymetallic nodules especially in the Clarion Clipperton Zone.

This global demand showed a sharp rise for many reasons such as market growth in China and India, and innovations in technology. It caught the supply side by surprise and a response has taken time from the mining industry. As this lag period comes to an end prices are anticipated to stabilise or even fall. A drop in demand due to slowing economic growth (for example in China today) will contribute to a decline in prices. At present there are no major supply constraints for any of the key metals in the nodules.

For a pioneer industry such as deep sea mineral exploration leading to exploitation, it is very difficult for exploration and likely exploitation entities to secure the long term commitment and the very large financial support needed from investors. A short-sighted view of the world market is not helpful.

However there are a number of other factors which may drive the exploration leading to exploitation of deep seabed minerals. Amongst the most significant are decline in grades in on-land mines, increasing mining and processing costs, environmental and land rehabilitation costs, as well as the costs for water and energy.

[97] www.infomine.com

E. The way forward and recommendations

The recommendations listed below are lifted from the various parts of the report with little or no change in wording. They are intended to capture a few but significant issues that are current in regard to Tuvalu's interest in deep seabed mineral resources assessment and their economic potential. At the same time the recommendations provide guidance on future needs and suggested actions to be included in the way forward and the Action Matrix of the DTIS 2016. These actions would enable Tuvalu within the next five years and currency of Te Kakeega III, to examine the economic potential of deep seabed mineral resources that Tuvalu may have rights to, and make the necessary decisions.

Recommendation 1: As an emerging prospect, Tuvalu has included deep seabed minerals in its new development plan Te Kakeega III to foster new business opportunities and attract investment similar to the language in the Indian Ocean Rim Association (IORA) Declaration in September 2015. To support this initiative, the DTIS 2016 includes a modest future work plan to submit for support to the Enhanced Integrated Framework (EIF) Board.
This recommendation would be met with the support for the implementation of the Action Matrix outlined in this report.

Recommendation 2: Tuvalu needs in a modest way to begin to develop its national institutional and human capacity to support the interest it has in understanding and realising any potential to sustainably develop deep seabed minerals. Tuvalu also needs to identify new regional or global support mechanism(s) or partnership(s).
This recommendation is captured as a capacity building issue in the Action Matrix.

Recommendation 3: Capacity building will be needed to ensure there is an enabling environment in which the Tuvalu Seabed Minerals Act can operate effectively. This will require assistance to support the establishment of the Tuvalu Seabed Minerals Authority and the Tuvalu Seabed Minerals Advisory Council and training of members of these bodies to ensure effective operation.
This recommendation is captured as a capacity building issue in the Action Matrix.

Recommendation 4: Recruit a consultant to review the nodule resource data available using a predictive model based on a geological model to account for nodule grade and abundance variability worked out in the Penrhyn Basin to the east and which was used and refined by the International Seabed Authority in its geological model of the Clarion Clipperton Zone. (The International Seabed Authority could not do this review as the work required is inside Tuvalu's EEZ). This approach can also value from data in nearby areas. Should this approach indicate that there were favourable and widespread areas for nodules in the Tuvalu EEZ, then a new cruise would certainly be worthy of consideration.
This recommendation is captured as a technical support/consultancy issue in the Action Matrix.

Recommendation 5: Tuvalu should continue to develop and strengthen its links with the International Seabed Authority and seek to engage fully whenever possible with the work of the Authority.
This recommendation is captured as an International Seabed Authority partnership issue in the Action Matrix.

Recommendation 6: Tuvalu can be encouraged to continue its efforts to become a sponsoring state of an entity with contract for a 15-year programme of work for exploration for polymetallic nodules in a Reserved Area of the Clarion Clipperton Zone. At the same time Tuvalu needs to develop and strengthen its national capacity to fulfil its role as a sponsoring state.
This recommendation is captured both as an International Seabed Authority issue and a capacity building issue in the Action Matrix.

Pillar 3: Action Matrix

Summary of the key policy recommendations for the DTIS 2016

		Requirements			Agencies Involved	Expected Duration
		Implement Existing Policy	*Change policy/ legislation/ Reform Institutions*	*Technical assistance/ investments*		
1.	**Macroeconomic environment and regional integration**	✓		✓		
1.1	**Capacity building** - Ensure capacity and ownership within the Department of Trade of the trade development agenda of Tuvalu.			✓	MFATTEL	Short and Medium-term
1.2	**Public Finance Management** a) Beyond the human aspect of social protection and education support, audit the social protection schemes for better financial sustainability and efficiency with scenarios of in-country alternative solutions. b) Better target and plan development projects with high impact on the population to be prioritized for funding by the SDE, FTF and the Survival Fund. The Tuvalu Survival Fund may benefit from large funding projects, arising from the signing of the Paris Agreement on Climate Change and other development partners' assistance, which will require strong planning, management and Monitoring and Evaluation system. **c)** Formulate pro-poor budgeting and planning in order to tackle poverty and unemployment.	✓		✓	MFATTEL Ministry of Finance Department of Planning	Short and Medium-term
1.3	**Regional Integration and Trade Agreements** a) Make greater use of the Framework of the Pacific Regionalism to advance regional agenda on common issues mainly as regard climate change and fisheries management through the VDS. Place special focus on the employment of Tuvaluan seafarers on fishing vessels and on the enforcement of regulations in favour of domestic employment. **b)** Continue the negotiations with the European Union on fisheries management so as to improve the sector and raise the profile of Tuvalu fisheries at regional level in terms of regulations, compliance and safety issues.		✓	✓	MFATTEL Donors Regional Organizations	Medium to Long-term
2.	**Private Sector and Investment**	✓				
2.1	**Policy Coherence** a) Strive towards policy coherence in the implementation of the DTIS 2016, Te Kakeega III and Tuvalu TPF and maintain an inclusive approach to trade	✓			MFATTEL	Medium to Long-term

	policy formulation by constructively taking on board the views of the private sector					
2.2	**Access to Finance** a) Review the operations of the Development Bank of Tuvalu (DBT) to ensure its objectives are realigned to those of a 'development bank' and competition with the National Bank of Tuvalu is avoided. b) Support the DBT through the continuation of its annual grants on a consistent basis until DBT reaches self-sufficiency. c) Examine the feasibility of establishing a credit loan guarantee scheme in order to address some of the issues concerning collateral and access to finance for small businesses, particularly for those entrepreneurs who do not have funds with the TNPF.		✓		MFATTEL Ministry of Finance DBT NBT	Short to Medium-term
2.3	**Land** a) Explore the merit of creating a land bank to facilitate easier access to land for potential local and foreign investors.		✓		MFATTEL	Short to Medium-term
2.4	**Entrepreneurship** a) The Government, Tuvalu National Council of Women, TNPSO and DBT devise mechanisms to provide focused training on business skills and financial literacy to prospective entrepreneurs. b) Support the National Council of Women to secure resources for restarting their micro-credit scheme that assists women to establish micro-businesses.			✓	MFATTEL TNPSO Tuvalu National Council of Women DBT	Short-term
2.5	**Sea & Air Transportation** a) Negotiate improved and more affordable shipping services to Funafuti within the context of the Central Pacific Shipping Commission. b) Continue efforts to diversify air service routes to and from Funafuti			✓	MFATTEL Ministry of Infrastructure & Transport	Medium to Long-term
2.6	**Institutional Investors & SOEs** a) Support the Tuvalu National Provident Fund (TNPF) as institutional investor to venture into investing domestically in Tuvalu subject to TNPF carrying out appropriate due diligence checks and cost-benefit analyses of potential investments. b) Accord TNPF the first opportunity to express interest to invest in SOEs that are targeted for privatisation. Should TNPF exercise its right of refusal then the project shall be publicly tendered. c) Based on the findings from the review of SOEs, consideration should be given to privatise either partly or fully the operations of the Tuvalu Telecommunications Corporation (TTC) in order to facilitate injection of capital to modernize ICT infrastructure, as well increase accessibility and affordability of ICT services.			✓	Ministry of Finance TNPF TCC	Medium to Long-term
2.7	**Investment Facilitation & Promotion** a) Taking into account the current review of the Investment Act, repeal the "60/40 rule" permitting foreign investors to own only 40% of equity in investment projects and replacing it with a minimum investment threshold of AUD 100,000.		✓	✓	FIFB MFATTEL	Short to Medium-terms

	b) Reduce the business registration fee to AUD 10 from the current AUD 100 to enable formalization of MSMEs. c) Strengthen the Investment Division by recruiting additional staff, as appropriate, to support the work of the Business Development Officer d) The Foreign Investment Facilitation Board (FIFB) to lower the number of days it takes to issue approvals to foreign investors to at least 5 days from the current 14 days. e) Establish a "one-stop shop" to facilitating foreign and local investment applications and carry out a review of the procedures required to start a business in Tuvalu with a view to simplifying procedures and making information available online. f) Prepare investment profiles and tailor-made investment incentive packages for the tourism, fisheries and agriculture sectors to attract FDI. Overseas diplomatic missions will be used to market investment opportunities in Tuvalu and investment profiles and incentives will be made available online.					
3.	**Transport, Trade Facilitation and Connectivity**	✓				
3.1	**International maritime freight rates review** a) The freight rates currently applied to the Suva-Funafuti leg may unnecessarily burden imports and thus deviate from the spirit governing the creation and operation of the CPSC b) Carry out a thorough review of the operating conditions of maritime services possibly with assistance from the SPC.	✓		✓	MFATTEL Ministry of Infrastructure & Transport	Short term
3.2	**Air Services Agreement with Fiji** a) Resume and finalize the negotiation with Fijian authorities to amend the existing agreement possibly with assistance from ICAO b) Pending negotiations with the Fijian Authorities, amend the agreement as follows 1) one or more airlines designated by Tuvalu 2) additional designated airports be designated in Fiji and Tuvalu as appropriate 3) authorization of air freight transport services, and 4) opening of connected air services to third countries.	✓		✓	MFATTEL Ministry of Infrastructure & Transport	Short term
3.3	**Port operations improvement:** a) Provide the Port of Funafuti with modern cargo handling equipment, operating procedures and tariff system as indicated in the 2010 DTIS and the TPF. The Government shall ensure provision of appropriate training for port personnel and appropriate handling equipment.	✓		✓	MFATTEL Ministry of Infrastructure & Transport	Short-Medium term
3.4	**Trade facilitation:** a) Allow Tuvaluan Public and private services to prepare for a significant increase of trade volumes and passenger traffic in Funafuti and outer islands. b) Examine the merits of a single window approach for all international trade procedures through the implementation of the ASYCUDA system as approved in DTIS 2010. c) Enhance institutional cooperation among port authorities and other relevant players in Tuvalu, including shipping lines, traders and customs, immigration, health and tourism authorities.	✓		✓	MFATTEL Ministry of Finance and Economic Planning	Medium - Long term

	d) Implement the Trade Facilitation Agreement as it will help improve trade procedures and operations, this without necessarily becoming a WTO member.					
3.5	**Inter-island cargo consolidation and freight forwarding services:** a) Allow cargo from different shippers in Funafuti consigned to different recipients in a given island to be grouped and properly packaged to ensure safer and more reliable carriage of goods between Funafuti and outer islands. b) Allow private operators to handle these grouping services		✓		MFATTEL Ministry of Finance and Economic Planning	Short-Medium term
3.6	**Inter-island cargo shipping services:** a) Allow privately operated cargo shipping services to access inter-island existing and future terminals in Funafuti and outer islands. b) Promote these services to be community-based private/public services		✓	✓	MFATTEL Ministry of Finance and Economic Planning Outer islands councils (Kaupule)	Short-Medium term
5.	**Sectoral Trade**		✓	✓		
	Focus on low volume but high end market for Tuvalu in line with local supply-side capacity. Priority sectors should be enhanced through value addition before being exported. Create backward linkages to holistically develop trade sectors.			✓		
5.1	**Agriculture**		✓	✓		
5.1.1	**Coconut Institutions and Coconut Planting** a) Establish a Tuvalu Coconut Board in Funafuti and Coconut Cooperatives on all the islands. b) Revive the coconut market with planting schemes covering all the islands with the introduction of better variety of coconut trees.		✓	✓	DoA, Island Councils, Coconut Board, Dev Partners.	Short – Medium Term
5.1,2	**Coconut Processing and Promoting Export** a) Process coconut into copra and further processing of copra for higher value chains such as coconut oil based products. b) Introduce packaging and marketing strategies to increase visibility and competitiveness		✓	✓	DoA, Coops, Island Councils, Private Sector	Short – Long Term
5.2	**Fisheries**		✓	✓		
5.2.1	**Training and Establishment of Phytosanitary and Sanitary measures and Standards** a) Establish a Fish processing and packaging room. b) In cooperation with regional partners, establish a regional Standards and SPS laboratory. c) Train Tuvaluan authorities and private sector on standards and SPS measures.		✓	✓	DoF, CFC ,NAFICOT,	Medium- Long Term
5.2.2	**Fish processing and preservation** a) Train and demonstrate various fish processing and preservation practices compatible with the lack of freshwater in Tuvalu.		✓	✓	DoF, CFC, NAFICOT, Private Sector, Donors	Medium- Long Term

5.2.3	**Fish Management and Employment** a) Continue trainings of Tuvaluan seafarers and fishermen at the Tuvalu Marine Institute. b) Set up clauses and enforce them for the recruitment of Tuvaluans as part of the crew of each fishing vessel up to 20 percent.		✓	✓		
5.3	**Tourism**		✓	✓		
5.3.1	**Tourism sector management** a) Conduct Monitoring and Evaluation on tourism sector on regular basis. b) Set up a mechanism for coordination with implementation of the NTDS		✓	✓	DoT, TNPS	Short and long term
5.3.2	**Introduction of tourism related activities** a) Build a marina with availability of creative sports facilities for tourists and local youths. b) Introduce art, handicraft and textile printing to create tourist products and improve marketing and branding of existing products. c) Facilitate SME investments in tourism sector, particularly in eco-tourism services.		✓	✓	Coops, councils, TNPS, TTA, Business Registration, Development bank, National Bank,	Short- Medium Term
5.3.3	**Improvement in Hospitality Management** a] Include training in Hospitality Management in the curricula of vocational trainings. b] Identify labour opportunities in hospitality sector in Tuvalu and overseas so as to meet labour shortage in other PICs.		✓	✓	TMTA, DoT, TTA, Private Sector	Short- Medium Term
5.4	**Labour Mobility**		✓	✓		
5.4.1	**Expand training curricula of the Tuvalu Maritime Training Institute to facilitate labour mobility** a) Introduce new courses to better prepare Tuvaluans and expand their uptake in labour mobility schemes		✓	✓	DoT, DoL, Private Sector, Dev. Partners	Short- Long Term
5.4.2	**Vocational Training** a) Improve the quality of higher education and vocational trainings in key areas (marine activities, hospitality management, agriculture, carpentry, etc.)		✓	✓	Dept. of Education, Dept. of Labour	Short- Medium Term
5.4.3	**Legislation and Regulation regarding Recruitment for Migrants** a) Formulate a Human Resources Plan. b) Provide assistance to migrant workers prior to departure on the legal and administrative aspects of migration (contracts, salaries, insurance, etc.) c) Formulate a regulatory framework to protect labour migrants and their families living and working overseas.		✓	✓	Cabinet, Parliament, DoL, Dev Partners.	Short- Long Term
6.	**Emerging Prospects - Blue Economy/Oceans Economy and Deep Seabed Minerals**					
6.1	**Capacity building** a) Establish and operationalise the Seabed Minerals Unit in Lands and Survey. b) Upgrade technical skills of the Government staff;	✓	✓	✓	Department of Lands and Survey Office of Attorney General; NGOs	Short-term End 2012 Long-term Ongoing for 5 years

	c) Enhance public awareness on potential for deep seabed minerals, including of potential employment opportunities.					Long-term
6.2	**Technical support** a) Review report of 1988 cruise data collected and comparison with data from areas adjacent to Tuvalu EEZ. b) Undertake study to determine the possible structure and functioning of the Tuvalu Seabed Minerals Authority and the Tuvalu Seabed Minerals Advisory Council; c) Mobilize financial and technical assistance to continue activities currently covered by the EU-SPC Deep Sea Minerals Project.	✓		✓	Department of Lands and Survey. Regional and International organisations, and donor partners External consultants	Short-term End 2016 Medium-term 2017 Medium-term 2017 and beyond
6.3	**International Seabed Authority (ISA) Partnership** a) Tuvalu continues to fulfil its obligations as a member of the ISA. b) Engage relevant entities in relation to the submission by Tuvalu of an application for a Reserved Area in the Clarion Clipperton Zone.	✓		✓	Department of Lands and Survey. ISA	Short-term and ongoing

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Annex: Partnerships and development partners involved in trade sectors in Tuvalu

Donor	Action Matrix Priority
AUSAID	Human development and Environment
Turkey	Trade and Human Development
FFA	Fisheries
UNDP	Trade Policy and Trade Facilitation
NZAID	Macroeconomic Environment, Fisheries, Health
SPREP	Human Development and Environment
Pacific Islands Forum Secretariat (PIFS)	Trade Policy and Trade Facilitation
Kazakhstan	Tourism and Education
ILO	Human Development and Environment
PT&I	Tourism, Trade Policy and Trade Facilitation
PIPSO	Private Sector Development
SPTO	Tourism Development
Asian Development Bank	Institutional Support and Policy reforms
European Union	Emergency, Water and Sanitation, Energy
Commonwealth Secretariat	Institutional Strengthening
United Kingdom	Parliamentary Support
Czech Republic	Education Development
Japan (JICA and MOFA)	Environment, Water, Education
Finland	Energy
Republic of China	Agriculture, Health, Education, Community Work,
UNESCO	UNESCO Activities
UNFPA	Family Planning and Health
UNICEF	Vaccinations
UNEP	Environment
WHO	Health
UN Women	CEDAW Report
UN	LDC Expert Working Group
WTO	Trade and Institutional Support